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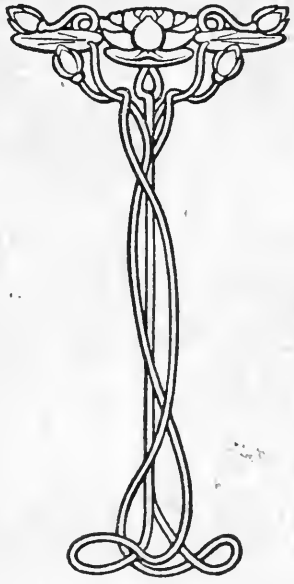
RECAP

INFANTS' MILK DEPOTS AND THEIR RELATION TO INFANT MORTALITY



THE NEW YORK MILK COMMITTEE

OF THE NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR

105 EAST 22nd STREET

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Is the result of more than fifty years' careful study and experience in the dairying industry, through the use of such methods as have been proved practical for the production of a milk supply representing the highest degree of cleanliness, purity and quality.

Our milk is supplied from dairies where cleanliness is a science, where all cows are regularly examined by our competent veterinarians, where the herd and all details connected with the dairy work are under our control and the constant supervision of our carefully-trained inspectors, and where all conditions are such as contribute to a milk supply that cannot be surpassed in real merit.

We keep in constant touch with the health conditions of all persons having to do with the dairies. All cases of contagious or infectious disease are immediately reported to us, and the supply of milk from such sources is withheld at our own financial loss. This one feature of our plan is of inconceivable value to our patrons, and alone should commend our products to every thoughtful user of milk.

Our Peerless Buttermilk is especially prepared daily from this same supply of fresh, pure, clean milk. The process of preparation converts the milk sugar into lactic acid, making it very beneficial for use as a food and beverage. In the light of recent investigations, which have shown the great value of lactic acid ferments as an aid to digestion, Borden's Peerless Buttermilk is a product of great merit.

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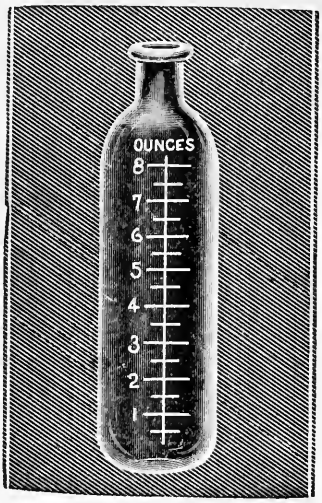

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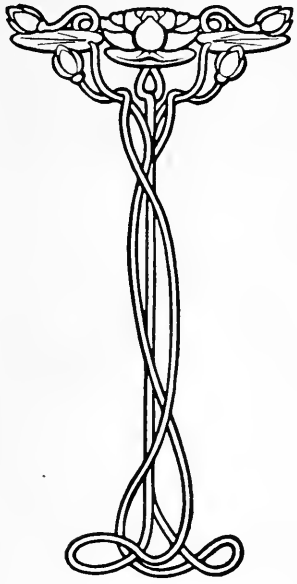
A Class Where Mothers Learn and Babies Grow
CONSULTATION AT A MILK DEPOT

INFANTS' MILK DEPOTS AND

THEIR RELATION TO

INFANT MORTALITY



THE NEW YORK MILK COMMITTEE

OF THE NEW YORK ASSOCIATION FOR IMPROVING
THE CONDITION OF THE POOR

105 EAST 22nd STREET

N43

THE NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR

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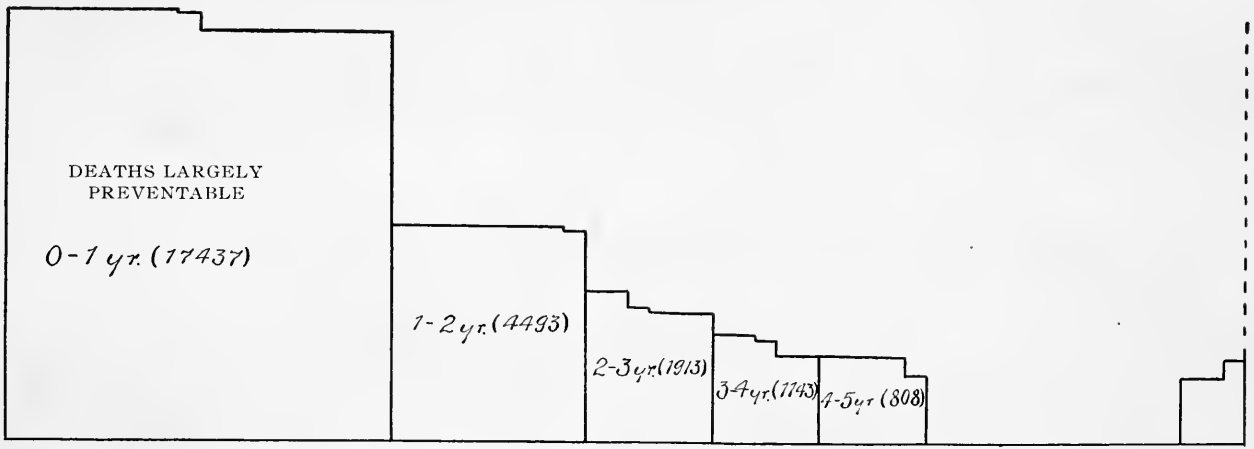


CHART 1.—Mortality in New York City, in 1907, of children under 5 years of age. The total number of deaths in 1907 was 72,205; of those under 5 years, 25,794; over 5 years 46,411. The square at the right represents the average deaths per year of age of all persons over 5 years of age.

CHART 2.—Average deaths per age for persons of different age groups. The figures in the upper line denote the average deaths per year for each group; those in the lower line denote the total deaths in each group.

FOREWORD.

The following report is intended for all persons interested in saving the lives of infants. While it deals with conditions in New York City, the principles which it illustrates and their method of application are, with such modifications as individual communities may require, feasible elsewhere.

Experience is a great teacher, and those who build upon the experience of others are fortunate. The Milk Committee has so built, and it now offers its failures, its successes, and its ideas to those who care to profit by them. Any information about its work not found in this report, will gladly be sent to any one applying to

WILBUR C. PHILLIPS, Secretary,
New York Milk Committee,
105 East 22d Street,
New York City.

ROBERT W. BRUÈRE, General Agent.

The New York Association for Improving the Condition of the Poor.

CONTENTS.

INTRODUCTION.

Infant mortality, in the opinion of most physicians and social workers, remains one of the biggest problems that confronts society. For years, it has been the object of serious concern to governments and municipalities, and has won the attention of physicians, philanthropists, milk dealers, sanitarians, and social workers, not only in this country, but also in France, Germany and England. In spite of everything that has been done, however, the total number of deaths among infants has not appreciably decreased. Isolated agencies have produced results in certain quarters, but, as directed against the whole problem, their efforts have been like those of scattered whippers in a forest fire—apparently in their own section of the forest they have the fire under control, but the wind, the sparks, the heat, the draught, and a hundred other factors still remain, each to assume at any moment the leading role in the program of conflagration and death.

That this is so, is shown clearly in New York City. Here, in unusual abundance, are found elements to combat infant mortality. Yet in spite of all that has been done by philanthropists, milk dispensing agencies, hospitals, sanitarians, physicians, social workers and the municipality, the number of deaths of infants under one year of age in 1907 was 17,437;—that is to say, considering the whole population, rich as well as poor, for the space of the entire year, between 140 and 150 babies out of every thousand born died before they reached the first year of age from causes which were largely preventable; whereas, considering the poor population during the hot weather alone, the rate in congested quarters was from 200 to 400 deaths per thousand births.

These striking figures, which as far as actual percentages are concerned, are exceeded in many other cities, give some statistical idea of the relation of infant mortality to our civic and national life, but they can never portray the pain, the loneliness and the wretchedness of which they are merely the numerical index. To appreciate their full meaning is impossible; it is beyond human capacity, and can only be understood in part by those who have suffered bereavement through the death of some little one.

In order to help reduce infant mortality, and to throw light upon important matters connected with it, the Milk Committee last spring decided upon a year's campaign, of which the following is the first quarterly report. Its purpose, apart from the actual good which it hoped to accomplish through the saving of lives was educational and constructive. It aimed to build upon foundations already laid, to take advantage of all demonstrated facts, rules and principles, and with them as a starting point, to see if, by any improvement, combination or arrangement, a better plan of reducing infant mortality, than that which had hitherto existed, could be worked out.

Of the truths on which the Committee built, the following may be cited, as demonstrated by isolated effort of other agencies.

1. The paramount importance of breast feeding, demonstrated by all physicians everywhere.
2. The necessity of clean milk for infants (where breast feeding is impossible), demonstrated by Mr. Nathan Straus, Dr. George Goler of Rochester, the Gouttes de Lait of France, etc.
3. The importance of educating mothers in infant hygiene, demonstrated by the late Dr. Budin and the French Consultations de Nourrissons.

4. The value of field work by nurses, demonstrated by the New York Association for Improving the Condition of the Poor in its Junior Sea Breeze Campaign of 1907, and by the New York Health Department.
5. The necessity for philanthropic aid, demonstrated by all relief and charitable agencies.

It had also been demonstrated that the danger of over-feeding was fully as great as that of under-feeding; that the question of bottle and breast-fed babies is often a question of the mother's nourishment; and that social and economic conditions are an important element in the problem. Yet in spite of all this knowledge, which in itself would seem to contain the solution of the question, few, if any, agencies, engaged in saving the lives of infants, combined all or even a large number of these ideas; indeed, there was much disagreement, some experts claiming that one factor and some another was of chief importance, so that not only they, but the public as well, had only a confused idea of the true significance of the educational, medical, sanitary, social, and economic aspects of the problem of infant mortality.

The Committee's program for 1908-9 was divided under two heads:

(A) The actual field work.
(B) The experimental work.

(A) In its actual field work the committee planned to establish and maintain seven milk depots with trained nurses in charge of each, and to employ in addition three trained nurses to do instructional field work, not connected with milk depots. The object striven for was:

1. The encouragement and assistance of breast feeding.
2. The education of mothers in infant feeding and hygiene (prevention by education, carried on by physicians and

doctors and based on the idea of the French Consultations de Nourrissons).

3. The providing in the depots of the best possible substitute for breast milk, namely, certified milk, modified in individual "feedings."
4. The gathering of important statistics bearing upon the problem of infant mortality.

(B) In its experimental work the committee endeavored to find some answer to those questions which had been raised most frequently by persons interested in the milk situation, and which until there was some unanimity of opinion concerning them, bid fair to prevent successful effort in the saving of infants' lives. These questions reduced themselves to the three following experiments:

Experiment No. 1.

What are the comparative results obtained by the continued use of pasteurized and of raw milk.

Experiment No. 2.

Which is the more economic and satisfactory method of saving infants' lives—the purely educational program carried on in connection with the ordinary milk supply, or the sale of modified milk, dispensed by nurses who also do instructional work?

Experiment No. 3.

Can infants' milk depots be conducted on a business basis, and if not, in how far will philanthropy be needed to carry on their "work"?

INFANTS' MILK DEPOTS AND THEIR RELATION TO INFANT MORTALITY.

THE ORGANIZATION OF THE MILK DEPOT WORK.

(1) Preliminary Steps.

The production of certified milk, its modification, delivery, and sale from infants' milk depots, means the investment of a great deal of money and labor. The amount of this expenditure varies with the magnitude of the undertaking. To establish and maintain seven modified milk depots, were the agency so doing to own its own farm, cows, laboratory, horses, delivery wagons, etc., would involve certainly an outlay of between seventy-five and one hundred thousand dollars, not to mention the anxiety and labor incidental to every step in the planning and equipment of the enterprise. To equip a smaller laboratory is less difficult, but even this involves all the difficulties of conducting a milk business, plus many which the ordinary milk business does not embrace.

In opening its depots, the Milk Committee, as has been stated, aimed to build upon foundations already laid. This applied not only to accumulated social, hygienic, and medical experience, but also to the experience of men actually engaged in the milk business. Even had the Committee been able to purchase its own dairy and build its plant, it would not have done so for the reason that it is not a milk enterprise, but a social organization. But because no other modified milk dispensing agency was doing in New York City exactly what the Committee wished to do, it was compelled to assume responsibility for the *theoretical* part of the undertaking—planning out and demonstrating the *new* work on the foundations of the old.

Previous to the commencement of the undertaking, Mr. Loton Horton, President of the Sheffield-Farms-Slawson-Decker Milk Company, had been elected a member of the Milk Committee by the Association for the Improvement of the Milk Supply of New

York City—an organization of about fifty milk dealers, of which Dr. Ernst J. Lederle, formerly Health Commissioner and a member of the New York Milk Committee, is a leading supporter, and of which Mr. Horton is president. Mr. Horton had for some time thought of opening a number of stores on the lower east side, where whole milk would be sold at reduced prices to poor people, and he consequently was ready to accept the proposition later embodied in the contract entered into by the Sheffield-Farms-Slawson-Decker Milk Co., and the Milk Committee in May, 1908.

By this contract (which is still in force) the Milk Committee purchased its own equipment, while the Sheffield-Farms-Slawson-Decker Milk Company gave floor space at its plant in West 57th Street as a laboratory, contracted for the milk, furnished horses and truck wagons, and rendered monthly a true bill for the cost of purchasing, modifying and delivering the milk without profit and exclusive of interest on invested capital.

(2) The Milk: Its Selection, Production, Transportation, and Tests.

Owing to the exodus of people from the city in summer time, a quantity of certified milk is always left on the hands of the dealers who sell it. This is usually sold at a loss, mixed in with the ordinary milk. By taking advantage of this surplus, the Milk Committee was able at the outset to secure as much certified milk as it needed, while the contracting company, by selling this milk at cost, saved any loss which might otherwise have been incurred through a shortage of customers.

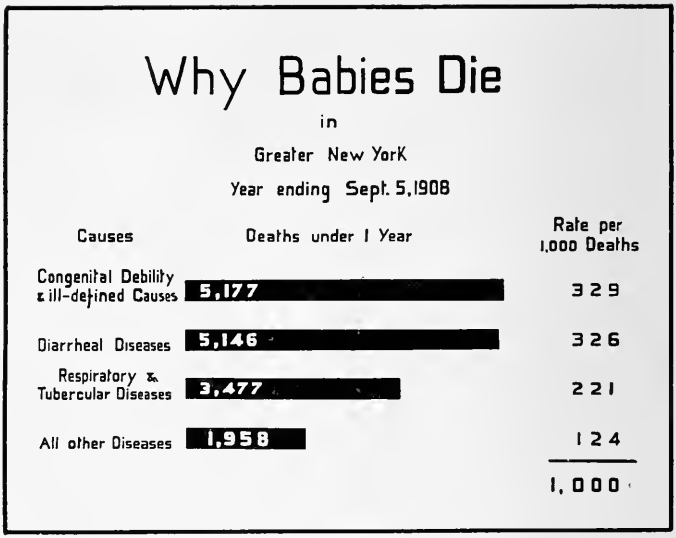
The milk chosen, and which is still in use, comes from Tully Farms in Onondaga County.

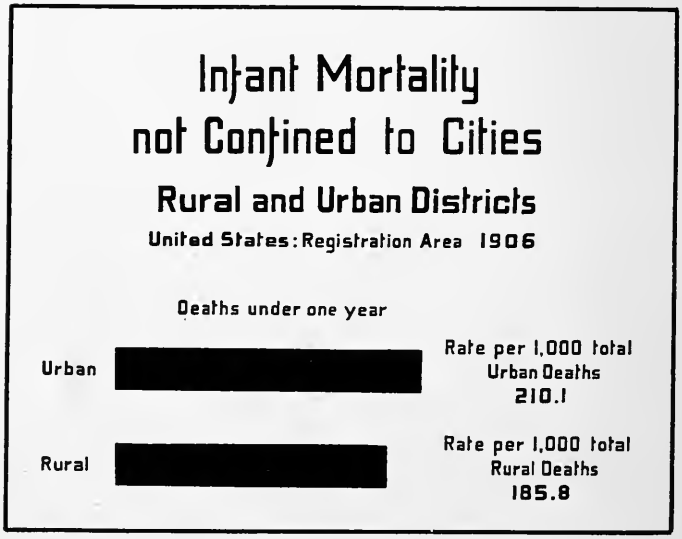
Here nature and enterprise have worked hand in hand. The meadows, where the cows range at will during the spring, summer and autumn, slope down to the shores of the Tully lakes. A pure water supply, a soil peculiarly rich in grass, and a lay of land which favors cleanliness, meet the prime requisites of sanitary dairying. Twice each month bacteriological tests and chemical analyses, on which the certification of milk depends, are made

by the Syracuse Academy of Medicine. In addition to these precautions, every cow is subjected to examination by a veterinarian at regular intervals. Animals found unfit to be milked, from whatever cause, are immediately removed from the herd. To secure even further protection, Dr. W. H. Leonard of Tully daily analyzes samples of the milk taken at every stage of its production. If the milk shows a higher count than 1,000 bacteria per c. c., investigation as to the cause is immediately set on foot. Dr. Leonard also maintains a scrupulous oversight of the farm lands, the buildings, the fodder and the physical condition of the men who come in contact with the milk. The latter have for their special use a lavatory and a laundry, in the former of which they bathe and dress before they work; in the latter the white suits and towels so extensively used at the dairy are laundered daily. No article is used a second time without being washed and sterilized.

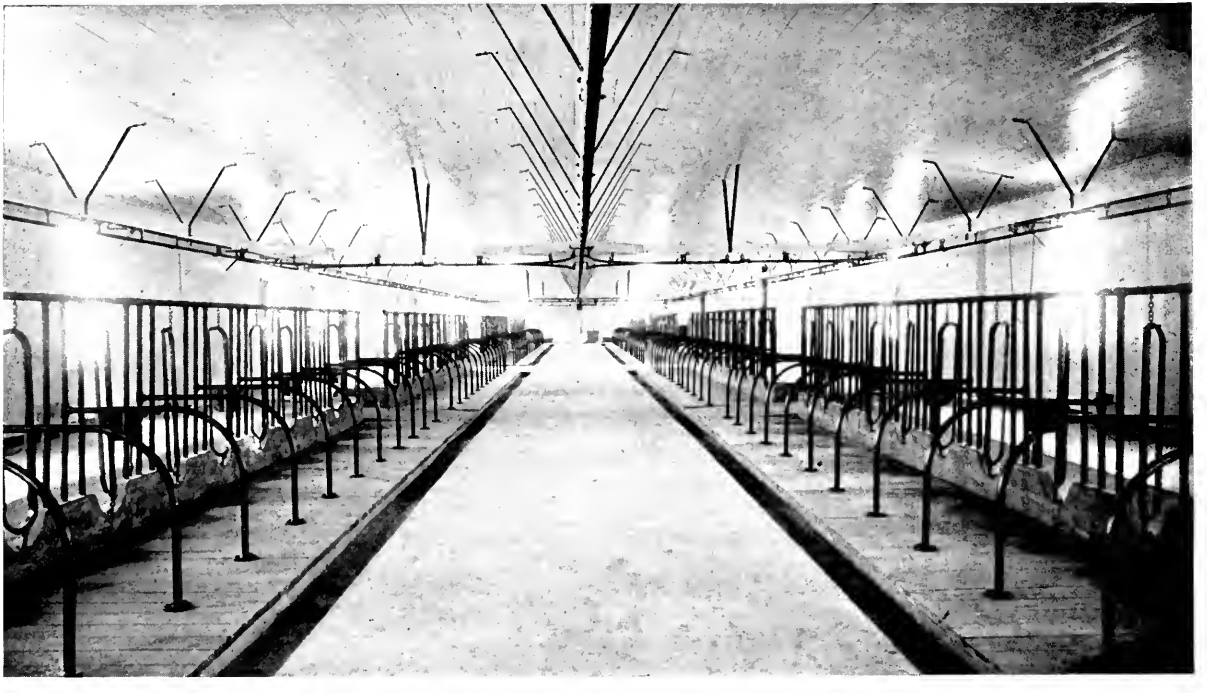
The dairy plant and the mechanical equipment at the farm are constructed according to the highest hygienic standards. The floors of the dairy building and the cow barn are laid in concrete, making it possible easily to flush and cleanse them as many times a day as circumstances require. The interior fixtures of the cow barn are iron, and therefore impervious to liquids and solids likely to absorb unhealthful matter. As a precaution against the accumulation of dust in mows or bins, no hay or feed of any kind is stowed away in the cow barns, but is transported to the mangers by means of a trolley system connected with the adjacent building. The King system of ventilation and an effective sewerage system furnish pure air and cleanliness. In the cow barns as well as the other buildings, an ample supply of water, available from faucet and hose connection, is supplied by gravity from a chain of springs connected with a spring house.

Before milking, the cows are thoroughly groomed and sprayed with pure water. The grooms then go down the line of cows, washing their sides and udders and wiping them dry with sterilized, single-service towels. A second man again washes and


Why Babies Die
in
Greater New York
Year ending Sept. 5, 1908
Causes
Deaths under 1 Year
Rate per 1,000 Deaths
Congenital Debility & ill-defined Causes
5,177
329
Diarrheal Diseases
5,146
326
Respiratory & Tubercular Diseases
3,477
221
All other Diseases
1,958
124
1,000


Infant Mortality
not Confined to Cities
Rural and Urban Districts
United States: Registration Area 1906
Deaths under one year
Urban
Rate per 1,000 total Urban Deaths
210.1
Rural
Rate per 1,000 total Rural Deaths
185.8

WHERE OUR MILK DEPOTS GET THEIR SUPPLY



Twice Daily the Stalls are Sterilized with Live Steam

COW BARN AT TULLY FARMS

dries the udders, after which the milkers, in their white suits and carrying their metal stools, as clean as parlor furniture, begin their duties. The first streams of "fore milk" are taken in separate utensils as a precaution against the retention of foreign matter in the ends of the teats. Small topped pails are used and emptied into large covered cans previously sterilized, in which the milk is carried to the dairy building by uniformed assistants. As fast as it is received, the milk is strained through a pad of sterilized cotton to eliminate any impurities which may have gathered in its transit. It is then run over a tubular cooler through which ice water is constantly passing to keep an even temperature of 36 degrees Fahrenheit. At this temperature it is put into forty-quart cans, which have previously been washed and thoroughly sterilized at the plant. A boiler and engine in the basement of the dairy building furnish the heat and power for this purpose. At all seasons the milk is subjected to a thorough refrigerating process, in which ice, cut from the pure waters of Tully lakes, is used. The room in which this process is carried out is accessible to the workers only; is rendered dust proof by seals and windows; and is moistened high and low by sprays of spring water after first being sterilized by live steam.

The milk leaves Tully at noontime, reaches New York City at eleven o'clock at night, and arrives at the laboratory at a uniform temperature of between 45 degrees and 48 degrees shortly after twelve o'clock. Thus it is thirty hours old before it is modified, having been drawn from the cows the morning and evening preceding its departure. This is not an ideal condition*—yet of the eleven farms supplying the 12,000 quarts of certified milk sold in Manhattan out of the two million quarts of milk which come to New York City daily, the Tully Farms bottled milk, on bacteriological counts made by the Health Department, ranks on an average, fourth best. Tests of the modified milk did not

[* The requirements for both guaranteed and certified milk are that such milk shall come from tuberculin tested cows, shall not contain more than 30,000 bacteria per cubic centimeter, and that such delivery shall be within 36 hours after milking, in sealed bottles, which have been filled at the dairy, and which bear the name of the dairy and the date of the earliest milking.]

begin until August 10th,* when Dr. Park of the Health Department very kindly offered to test twelve samples weekly, six samples of the pasteurized and six of the raw, one of each formula, including the whole milk. Thanks to these tests, the Committee was able subsequently to discover and eliminate certain defects in its laboratory work, which in spite of the excellent character of the milk used had, on one occasion particularly, resulted in the appearance of several "sick babies" on its list.

At present each separate process in the modification and preparation of the milk in the laboratory is tested regularly by a bacteriologist. The sanitary precautions described on page 22 have also been adopted, reducing the danger of infection to a minimum. The fact that it is necessary to bring this milk to the city in cans, however, renders the problem of keeping down the bacteriological content of the raw milk extremely difficult.

Tests of the milk, made by the Health Department on August 24 and August 31, after modification in the Committee's laboratory, were as follows:

Formulæ	Colonies Per Cubic Centimeter. Raw Milk Modified	Pasteurized Milk Mod.
Test on Aug. 24, 1908.		
I	19,000	10,400
II	460,000	100
III	41,600	100
IV	240,000	300
V	45,200	500

Formulæ	Colonies Per Cubic Centimeter. Raw Milk Modified	Pasteurized Milk Mod.
Test on Aug. 31, 1908.		
I	23,500	no growth
II	90,000	200
III	29,900	1,000
IV	23,400	300
V	33,000	100

[* Owing to the fact that the Committee on June 17th found itself engaged in managing a retail milk business, in conducting a small Health Department, in experimenting with a new system of relief for necessitous cases, in establishing and supervising a very complex and difficult statistical work, in ordering machinery, leaflets, ledgers, score cards, charts, literature, etc.]

This milk with its high bacteriological count is the same milk, treated in the identical manner up to the moment when it is canned, as the bottled milk, the tests of which, made by the Milk Commission of the New York County Medical Society for the three summer months run as follows:

Date		Count	Rank among certified milk farms sending samples same week.
June	15	1,950	6th in 11
	22	400	3rd in 12
	29	450	3rd in 13
July	6	1,400	4th in 11
	13	1,050	3rd in 11
	20	1,100	2nd in 11
	27	1,250	2nd in 11
August	3	1,900	2nd in 12
	10	900	3rd in 11
	17	4,000	6th in 10
	24	500	2nd in 10
	31	500	3rd in 12
Sept.	7	750	2nd in 10
	14	950	3rd in 10
	21	1,200	4th in 10
	28	1,100	2nd in 11

This marked difference between the canned and the bottled milk was due not only to the difficulties of shipment, but to improper washing of bottles (one of the greatest sources of infection), and by the delay in building the Committee's new bottle filler, which necessitated the filling of the bottles by hand. With the completion and use of this machine; the cleaning of the washing machine (the plungers of which, it was discovered, had become clogged); the substitution of new cans for the old and somewhat worn cans used at the start, and the protection of the milk in these cans from dust by the use of a paper cap under the cover, the main causes for a high bacteriological content were subsequently removed.

The last tests of the milk, received from the Health Department were as follows:

Formulæ	Colonies Per Cubic Centimeter. Raw Milk Modified	Pasteurized Milk Mod.
I	300	no growth
II	18,000	200
III	7,400	200
IV	400	3,000
V	1,600	200

(3) The Formulae.

In choosing its formulæ, the Committee was obliged to take into consideration the varying opinions and theories of physicians interested in infant feeding, and to select mixtures which, because they could be made by direct dilution of whole milk, (thus avoiding the use of top milks), would adapt themselves to commercial preparation on a large scale. For summer work, it was also necessary that these formulæ should contain a low percentage of fat.* The choice narrowed down to two sets of formulæ, one prepared by Dr. Rowland G. Freeman and the other by Dr. L. Emmett Holt.

Dr. Holt's set provided for five formulæ as follows:

	Fat	Sugar	Proteid	Milk	Milk Sugar	Lime Water	Filtered Water
1. Very weak	.50%	4.5%	.54%	16 oz.	6 oz.	8 oz.	104 oz.
2. Weak	1.00%	4.5%	.99%	32 oz.	6 oz.	8 oz.	88 oz.
3. Medium (average)	2.00%	4.5%	1.75%	64 oz.	6 oz.	8 oz.	56 oz.
4. Strong (8-12 mos.)	3.00%	4.5%	2.65%	96 oz.	6 oz.	8 oz.	24 oz.
5. Strong (over 1 yr.)		Whole milk.					

Note.—Barley water, made as follows, may be used as diluent to any of the above: 4 oz. barley flour by measure to water 1 gallon; salt to this amount—1½ even teaspoonfuls—grs. 90 by weight.

Dr. Freeman's formulæ were composed as follows:

	Fat	Sugar	Proteid	Milk	Milk Sugar	Lime Water	Barley Gruel
1.	1.00%	6%	1.00%	1 qt.	6½ oz.	7 oz.	2 qts. 25 oz.
2.	1.50%	6%	1.50%	1 qt. 19 oz.	5¾ oz.	7 oz.	2 qts. 6 oz.
3.	2.00%	6%	2.00%	2 qts.	2 oz.	7 oz.	1 qt. 25 oz.
4	3.00%	6%	3.00%	3 qts.	4 oz.	7 oz.	25 oz.
5.		Whole milk.					

Inasmuch as Nos. 2, 3, and 4 of Dr. Holt's formulæ were almost identical in their relative strengths with Nos. 1, 3, and 4 of

[* The winter formulæ are being made with standardized 3% and 6% milk thus ensuring proper and even percentages in the daily supply. Butter fat tests are made in the laboratory daily with a Babcock machine. See physicians order blank, page 23.]

Dr. Freeman's formulæ, (the difference in the two sets being that Dr. Holt's set provided a very weak formula for sick infants and Dr. Freeman's set provided a medium formula to go between Nos. 2 and 3 of Dr. Holt's set), it was decided for simplicity in preparation, to add a weak formula corresponding to Dr. Holt's formula No. 1 to Dr. Freeman's set, making the following list of five formulæ, containing, with the exception of the first, the same ingredients:

	Fat	Sugar	Proteid	Milk	Sugar of Milk	Lime Water	Boiled Water	Barley Gruel
1.	.5%	6%	.5%	1 pt.	7 oz.	7 oz.	3 qts. 9 oz.	
2.	1%	6%	1%	1 qt.	6½ oz.	7 oz.		2 qts. 25 oz.
3.	1½%	6%	1½%	1 qt. 19 oz.	5¾ oz.	7 oz.		2 qts. 6 oz.
4.	2%	6%	2%	2 qts.	5 oz.	7 oz.		1 qt. 25 oz.
5.	3%	6%	3%	3 qts.	4 oz.	7 oz.		25 oz.

(4) The Modification of the Milk.

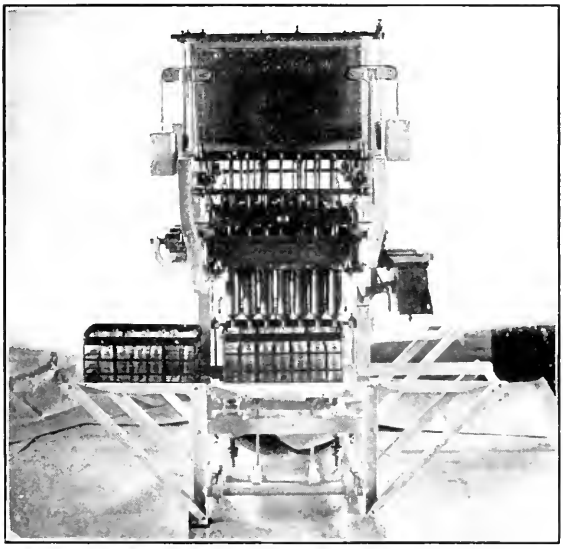
There are five men working in the laboratory, a foreman and four assistants, three of whom not only help in sterilizing and filling the bottles, but also deliver them at the different stations. These men are physically examined by a physician regularly; they wear white suits and caps, and pay scrupulous attention to their personal cleanliness, having for their use a lavatory and shower bath on the same floor.

As soon as the milk reaches the laboratory the cans are put into a long box and surrounded with cracked ice. The modifications are then made, the bottles are filled and corked, those that are to be pasteurized are put into the pasteurizer where the milk is heated at a temperature of 167 degrees for 20 minutes, and those filled with raw modified milk are cooled in water compartments of decreasing temperature, until finally they are put in the crates and covered with cracked ice. In order to avoid confusion, bottles containing the same formulæ are put in the same crate. The tagging of these different mixtures with their varying quantities of raw and pasteurized milk for seven depots has been and is a difficult undertaking. Often there are as many as twelve different quantities which, multiplied by the number of formulæ in use, give 60 possible combinations. When one is handling 2,500 bottles daily as the Milk Committee does at present, the problem is one demanding the greatest care.

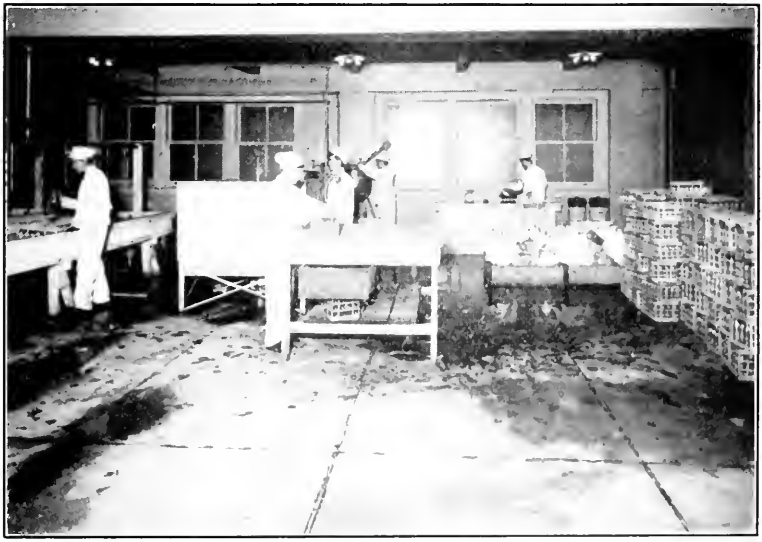
The prescription orders are telephoned into the laboratory by the different nurses at the close of each day.

(5) Sanitary Methods at the Laboratory.

In safeguarding the handling of the milk in the laboratory and in protecting from infection each object that comes in contact with it, the Committee has been indebted to the suggestions of Dr. Charles E. North, of the Lederle Laboratories. As soon as the men return from their morning deliveries, the bottles, turned upside down in the crates as they are received from the depots, are passed three times through the washing machine, receiving first a jet of soda solution, then a jet of hot water, and then a scalding rinse, all squirted into them at high pressure from below. They are then covered with cheese-cloth and, still inverted, carried to the laboratory on the third floor. No bottle, can, filler, vat, pail, receiver or receptacle used to contain milk is allowed to stand uncovered or to be exposed to the air in any way. Close meshed cheese-cloth is immediately drawn over such an article when it is not in use. Yard strips of this cheese-cloth (costing 5 cents each) are cut in halves and folded over once, making pieces a foot and a half square, which may be used for various purposes. As soon as a piece has been used it is thrown into a pail of soda solution which is always near. Each pail contains a solution of Wyandotte, two tablespoonfuls of soda to each pail. Afterwards the cheese-cloth is put into boiling water and washed, first in soda, then in hot water, after which it is wrung two or three times through a sterile wringer (not touched by hand), and hung over a line to dry. When it is used again the exposed surface is folded inside. In sterilizing the vats, cans, dippers, pails, scoops, and other objects used in the modifications, the following process is observed: First the receptacle or object is scrubbed with soda solution, a wet brush being used with dry powder. Then it is scrubbed again with cold water, after which it is rinsed twice with tepid water. After that it is washed in hot water at 160 degrees F. and a steam hose is applied. It is then put into the sterilizer. No covers are used on milk cans, but a sterile cheese-



The Bottle Filler



Surgical Cleanliness in Preparing the Milk— 2 a. m.

THE MILK LABORATORY

Adenoids—Mouth Breathing—a bad condition that can be corrected
The "Pacifier"—a bad habit that baby should not get

A Well-Fed Baby Needs no Lullaby

GOOD ECONOMY TO GET THEM STARTED RIGHT

PHYSICIAN'S ORDER BLANK

INFANTS' MILK DEPOTS

NEW YORK MILK COMMITTEE, A. I. C. P.

160 Mott Street
73 Cannon Street
412 West 47th Street
434 East 73d Street
246 East 82nd Street
202 Henry Street
146 West 100th Street

PRICE PER FEEDING

½ oz.— 1 oz. - ½ cent
1½ oz.— 2 oz. - 1 cent
2½ oz.— 3 oz. - 1½ cents
3½ oz.— 5 oz. - 2 cents
5½ oz.— 8 oz. - 2½ cents

WINTER FORMULAE

Prepared from a Standarized 4% and 6% Milk

No.	Fat	Sugar	Proteid
1.	1%	6%	1.0%
2.	1½%	6%	1.4%
3.	2%	6%	1.4%
4.	2%	6%	1.7%
5.	2.5%	6%	2.0%
6.	3%	6%	1.7%
7.	Whole Milk.		

*Please furnish*_____

*living at*_____

*with modified milk for her baby, aged*_____

Date	Form	Oz. Per Bot.	No. of Bot.	Name of Physician

Mothers whose infants are prescribed for by private physicians are expected to pay the full price for the milk.

Private physicians are expected to assume responsibility for the condition of infants fed by them.

Ingredients, in detail, of the formulae will be furnished on application.

cloth is fastened over them with clothes pins. No part of any receptacle over which the milk passes or which comes in contact with the milk is touched with the naked or gloved hands or is allowed to touch any object which is not scrupulously clean. Each morning after the milk has been prepared each foot of floor space is sterilized with steam. These and other precautions give some idea of the care taken at the laboratory, in spite of which, as has already been explained, the bacteriological count of the raw milk, during the early stages of the work, was very high.

(6) The Location of the Depots.

In locating its depots the Committee took the following facts into consideration:

(a) Density of population.
(b) Nationality.
(c) Relation to coöperating social and philanthropic agencies.
(d) Relation to other milk dispensing agencies.

The idea was to find districts which not only needed milk depots, but which, as respected living and racial conditions, would make fair comparison possible for experimental purposes. Letters and literature sent out in advance to many churches, settlements and charitable associations secured offers of personal services, money and rent—in fact there was some little competition on the part of various agencies to secure the depots. In each instance the needs of the community and the opportunity of securing the best results were the only factors considered. Several offers of rooms splendidly equipped but poorly located had thus to be passed over. In one instance a settlement (the East Side House), whose offer was declined, itself organized a movement to coöperate with the Committee, and contributed generously to pay the rent of a store situated more advantageously, in which the Committee is now carrying on its work.

Conforming to the Committee's experimental program, pasteurized milk was sold from three, and raw milk from four, of

HUDSON RIVER
HARLEM RIVER
EAST RIVER
NORTH RIVER
134th ST.
119th ST.
110th ST.
96th ST.
94th ST.
83rd ST
76th ST
65th ST.
59th ST.
52nd ST
49th ST.
40th ST
36th ST
14th ST
11th ST
STANTON ST.
BARROW ST.
CANAL ST.
JACKSON SLIP
CATHARINE ST.
BROADWAY
6TH AVE
5TH AVE
CENTRAL PARK WEST
LEXINGTON AVE
EIGHT AVE
SEVENTH AVE
Key to Density of Population:
Per acre:
Under 100
101-200
201-350
351-500
501-650
Over 650
Key to Milk Depots:
N.Y. Milk Committee.
Nathan Strauss
Diet Kitchen Ass'n.
Good Samaritan Disp.
Nathan Strauss Summer Depots
MAP
OF
BOROUGH OF MANHATTAN
Showing Density of Population
and
LOCATION OF MILK DEPOTS.
PREPARED BY
BUREAU OF SOCIOLOGICAL RESEARCH
130 MANHATTAN ST.
NEW YORK.
Nov. 1905

these depots, the milk in both groups coming from the same dairy.

The depots were located as follows:

Selling modified pasteurized milk: 160 Mott Street, Italian district. (Joint depot with the Diet Kitchen Association; located in a store, Committee's share of rent $12.50.)

Selling modified pasteurized milk: 262 East Broadway, Jewish and Italian district. (Retail store of Sheffield-Farms-Slawson-Decker Milk Company, rent free, salary of nurse paid for summer months by Henry Street Settlement.)*

Selling modified pasteurized milk: 412 West 47th Street, Irish and American district. (Basement room in the Hartley House Settlement, rent free. Expenses of installation and salary of nurse provided by Mrs. W. V. S. Thorn for the first three months.)

Selling modified raw milk: 73 Cannon Street, Jewish district. (Basement room in the Alfred Corning Clark House, rent free.)

Selling modified raw milk: 434 East 73rd Street, Bohemian district. (Store; rent, $16.00 a month, provided for the first three months by the social workers in the neighborhood.)

Selling modified raw milk: 246 East 82nd Street, Jewish district. (Basement room in the Yorkville Dispensary, rent free.)

Selling modified raw milk: 146 West 100th Street, Irish and American district. (Front room in Bloomingdale Guild, rent free; Riverside district of the Charity Organization Society pledged $1,000.00.)

(7) The Engaging of the Nurses.

The nurses for the depots were chosen with care from a group of about forty candidates. Few of them had had social or field experience, so that the main determining factors were:

(a) A knowledge of infants.

(b) A personality which would attract and hold mothers, and

(c) Some apparent fitness for social work.

[* This depot is now located at 202 Henry Street.]

The personality of the nurse is a most important factor, for no matter how intelligent and capable she may be, if she lacks sympathy and kindness, her work, from the social point of view, cannot be either thorough or efficient.

Language is another important factor. When it began its work the Committee was unable to find nurses who could speak certain of the foreign languages. This difficulty was partly overcome by securing interpreters, who were provided in two cases by coöperating settlements. The nurses also nearly always found someone in the family who spoke English, but they missed the advantage of language, without which it is difficult to gain admission into the lives of foreign speaking peoples.

(8) The Preparatory Work of the Nurses.

Although the depots did not begin to sell milk until June 17, all the nurses were put into the field June 1, in order that they might familiarize themselves with their neighborhoods, open and fit up their stations, and make sure by home visitation of a certain number of mothers. Announcements of the proposed "classes for mothers" were made from several pulpits, and various settlements sent out notices.

In the East 73rd Street depot a corps of physicians was organized and pledged to instructional work before June 1st, but in each of the other neighborhoods the nurses had to act as organizers, personally calling upon physicians and securing the offer of their services for instructional classes or consultations. These physicians, who began work with the opening of the depots, were selected largely on the recommendation of social workers or of other physicians interested in the neighborhoods. Some had had wide experience in infant feeding and some had had little experience. All of them, however, spoke the language of their communities, which largely compensated for the lack of such knowldge on the part of the nurses.

THE CONDUCT OF THE MILK DEPOTS.

No mother who comes to the depots can get the milk without first seeing one of the Committee's physicians, and making it clear that she is unable to nurse her baby. The physician then examines the child, writes a suitable food prescription, and secures from the mother a promise to return to his consultation regularly each week, bringing her baby to be weighed. If she does not do this, she is given to understand that the milk may be refused her.

Each infant brought to the depot is given a separate sheet in the nurses' cash ledger, which covers its record for a year. This ledger shows day by day how many bottles of milk, what formula and what quantity of milk the baby is getting, how much the mother is paying for the milk, etc.

The pages are dated uniformly in the same horizontal columns so that the daily entry for each child occurs on a corresponding line throughout the book. When a new case is started the first entry is not made at the top of the page, but in the column allotted to that date as on the other pages. If the milk is not called for, the column is left blank. This shows at once any irregularity on the part of the mother in getting the milk (thus proving a valuable adjunct to the statistical work), and also facilitates the making of the weekly accounts. A small card, numbered to correspond with the ledger page is given to each mother who presents it when she comes for milk; her page can thus be turned to readily and the necessary entries made without the necessity of asking her name, quantity of milk wanted, etc.

When a woman is unable to pay the full price of the milk, a memorandum is made at the top of the page stating the amount she is able to pay and also the name of the charitable organization which has agreed to assist her. The amount paid by the woman, in accordance with her agreement, is each day entered in the column "Cash Received." Any deficit on her part is entered in red ink at the end of the week under the total amount of money she has paid. A weekly bill for the balance of the account is rendered to the relief organization.

NO. 19 WOMAN CAN PAY 2¢ DAILY. A.I.C.P. PAYS BALANCE

NAME OF BABY

ADDRESS

SAFETY SYSTEMS COMPANY, MANUFACTURERS, NEW YORK

DATE	MILK								BOTTLES		
	Age	Form	Oz. per Feed'g	No. of Feed'gs	Rate Asked	Total Value	Cash Rec'd	Still Owing	Cash Rec'd	Dep. Ret'd	No. Owing
AUG. 7		2	3	8	1½	12	2	10	16		
8		"	"	"	"	12	2	10			
9		"	"	"	"	12	2	10			
10		"	"	"	"	12	0	10			
11		"	"	"	"	12	4	10			3
12		"	"	"	"	12	2	10			
13		"	"	"	"	12	0	10			
						84	12	70			
14				WOMAN OWES .02							
15											
16											
17											
18											
19											
20											
21											
22											
(ETC.)											

NOTE - A WEEKLY BILL IS RENDERED TO THE RELIEF SOCIETY FOR THIS AMOUNT

Section of cash-ledger sheet covering a period of three weeks. The incompleted vertical column of which this is the upper third, contains spaces for nine weeks. There are three of these vertical columns, containing spaces for twenty-seven weeks, on each side of the sheet, making a total of fifty-four weeks, or one year, for the entire sheet.

Deposits on bottles are entered in the bottle account under "Cash Received." Deposits are returned to women when they stop getting the milk and the proper entry made. When bottles are not returned the number lacking is entered in the column "Number Owing."

The milk arrives in the depots before nine A. M.—in some of them as early as half past seven A. M. The ice, which has been sold to the Committee at a 40 per cent. discount by the American Ice Company, usually comes before this, and is ready for distribution with the milk. The Herald Ice Fund offered free ice to the Committee, providing the Committee would call for it at the various distributing stations, but owing to their distance from the milk depots this was found to be impracticable.

During the summer, most of the mothers came for the "little bottles" with pails into which enough ice was placed to keep the milk cool during transportation to the home. In one station ice for home-refrigeration was given away until it was found that mothers well able to pay for it were imposing on the Committee: after which small pieces were sold (at a penny each) to all but those who were found to be really indigent. Home-made ice boxes, constructed, for example's sake, by the nurses themselves, were on exhibition at all the depots and consultations. These, for the most part, were patterned after the "Hess refrigerator," and consisted of wooden boxes stuffed with sawdust or excelsior, in which, it was found, milk kept on a small piece of ice or even in cold water would remain at a low temperature for many hours. The extent to which mothers profited—or rather did not profit—by these instructions, is illustrated in the accompanying table:

Table Showing Use of Refrigerators by Women who Attended Milk Depots and Consultations not Connected with Milk Depots.

(NURSES' ESTIMATE)*

Depots Selling Pasteurized Milk:

MILK DEPOT	STANDARD Refrigerator	HOME-MADE Refrigerator	NO Refrigerator
160 Mott Street - - -	65%	0	35%
262 East Broadway - -	75%	5%	20%
412 West 47th Street -	50%	25%	25%

Depots Selling Raw Milk:

73 Cannon Street - - -	25%	0	75%
434 East 73rd Street - -	20%	0	80%
246 East 82nd Street - -	50%	0	50%
146 West 100th Street -	75%	0	25%

Consultations Not Connected with Milk Depots:

248 East 105th Street -	60%	25%	15%
173 West 63rd Street -	68%	2%	30%

Most of the families that had no refrigerators kept their milk in pails of cold water, or used tubs, dish-pans, etc. A few had the use of a neighbor's refrigerator. In one of the depots, a Straus Pasteurizer was used with marked success for the double purpose of heating the milk and keeping it cool.

*NOTE.—Accurate record of home refrigeration is made on the charts which the Committee is now using.

Both ice and milk were dispensed at first by all the nurses. Toward the end of August it was found necessary in the busiest depots to hire assistants to distribute the milk while the nurse interviewed the mothers and looked after their accounts. Owing to the complicated bookkeeping made necessary by the Committee's system of individual feedings, and the value of a careful inquiry on the part of the nurse into the daily condition of each infant who uses the milk, this plan will soon be adopted in all of the depots. The avoidance of the dangers of over and under feeding and of the upsets occasioned either by the milk or some other factor, fully compensate for the additional labor and expense involved in this feature of the depot service.

In one depot, that conducted jointly with the Diet Kitchen Association in Mott Street, raw milk has been provided for nursing mothers. A diet kitchen also adjoins the Committee's milk depot in Bloomingdale Guild.

THE CONDUCT OF THE CONSULTATIONS.

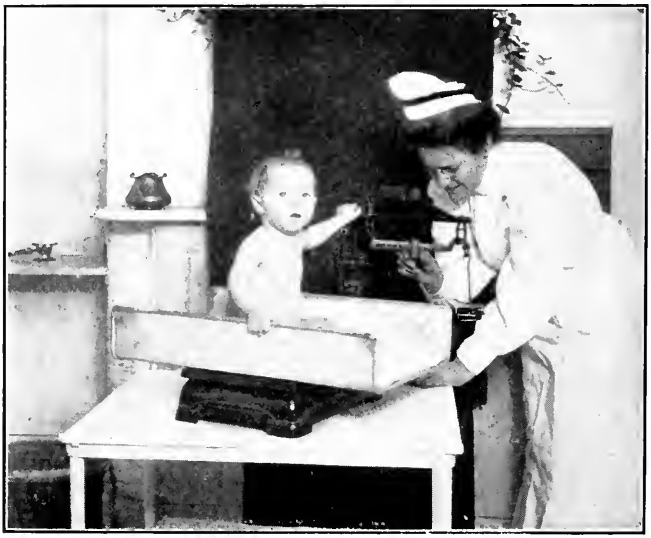
Dr. Budin, who established the first French Consultations de Nourrisons, once said that the two essentials of a consultation are a pair of scales and the services of a devoted physician. To these the Milk Committee has added an important third factor—the services of a trained nurse. The scales used in the Committee's consultations were selected after an investigation of scales used in this country and abroad. On the platform of a pair of Fairbanks Standard scales, weighing by ounces, is fastened a long, flat, zinc scoop, 14 x 25 inches, turned up to the height of 5½ inches on the sides and open at both ends. The edges of this scoop are rounded. It rests on the platform with its length parallel to the arm of the scales. Whoever is using it thus has the baby directly before and below him, with absolutely no danger of its falling out. By having no ends to the scoop, the baby cannot obtain a purchase with its feet to kick or push. It can lie down, sit up or stand up, as is desired. The scales are accurate: there is no wobbling or vacillation, as is the case with needle and

Milk Messengers

Six Bottles of Formula No. 2, for Baby Sixty-seven

FROM MILK DEPOT TO THE HOME

Handicapped



Twelve, Thirteen—*Fourteen* Pounds

A POOR START AND A GOOD ONE

basket scales; and they weigh up to 200 pounds. A napkin is used, and over this is spread a piece of tissue paper—one sheet for each baby.

In five of the depots the consultations have been held in the same room where milk has been dispensed. In Mott Street they were held first in the chapel of the Church of San Salvatore; and later in rooms connected with St. Agnes Settlement, next door to the depot. The nurse connected with the Sheffield-Farms-Slawson-Decker Milk Company's store in East Broadway held her consultations at the Nurses' Settlement in 265 Henry Street, a block and a half away.

The hours for the consultations vary. In the East 73rd Street depot one consultation was held each day from 11 until 12 o'clock, and during certain weeks of the summer two additional consultations were held in the afternoon. With this exception all of the consultations were held in the afternoon.

The actual conduct of the consultations has been by no means uniform. In some of them the doctor makes a short talk to the mothers, either at the beginning or at the end; in others he keeps up a running fire of comments, suggested by the condition of the babies as they come under his notice; in others he includes in his remarks to any mother as many others as come within range of his voice; in others the noise and confusion is such that he can give only individual attention, trusting to his listener to act as a missionary in spreading the gospel of proper food and infant hygiene among the rest.*

The subjects discussed are numerous, and embrace the minutest details of feeding, clothing, ventilation, etc. Some doctors are of course better teachers than others and are quicker to win and hold the attention of the mothers. This is only another way of saying that trained educators are needed to educate.**

[* A leaflet describing how an ideal consultation should be conducted, is now being prepared, and will be sent to any address on receipt of postage.]

[**To meet the demand for teachers the Association for Improving the Condition of the Poor is at present training a number of nurses in social work, and the physicians working in conection with the Committee are preparing a series of lectures to educate themselves in infant feeding and infant hygiene.]

The attendance at the consultations has been excellent. In some of them the women have brought their sisters, aunts, cousins and *mothers* with them—so that the problem of accommodating them all in one room was difficult. But the economy of instructing fifteen or twenty mothers at one time, leaving the rest of the day to the nurse for follow-up work among such cases as need her most, far outweighs these petty annoyances.

Some idea of the hours of the consultations, their frequency and the average number of babies that attended them may be obtained from the accompanying table.

Schedule of New York Milk Committee Consultations Showing Attendance During August, 1908

CONSULTATIONS HELD AT MILK DEPOTS

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total Attendance	
	Time of Consult'n.	2 p. m.	3 p. m.	4 p. m.					
	Number enrolled..	20	22	17				Total number enrolled.....	59
*158 Mott St.	Attend'ce by wks.	13-20-23-10-15	23-17-20-10	13-4-16-4				Total attendance for month.....	188
	Ave. attendance...	16	18	9				Average attendance (13 classes)....	14
	Time of Consult'n.	2 p. m.		3 p. m.			3 p. m.		
	Number enrolled..	16		12			15	Total number enrolled.....	43
73 Cannon St.	Attend'ce by wks..	8-14-14-9-10		11-4-6-4			14-9-6-9	Total attendance for month.....	118
	Ave. attendance....	11		6			10	Average attendance (13 classes)....	9
	Time of Consult'n.	4 p. m.		4 p. m.	4 p. m.		2 p. m.		
	Number enrolled...	12		11	15		26	Total number enrolled.....	64
**267 Henry St.	Attend'ce by wks..	2-9-5-12-8		10-11-9-2	2-5-15		22-25-29-18-12	Total attendance for month.....	196
	Ave. attendance...	7		8	7		21	Average attendance (17 classes)....	11
	Time of Consult'n.	11 a. m.	11 a. m.	11 a m.	11 a. m.	11 a. m.	11 a. m.		
	Number enrolled...	10	8	12	5	4	9	Total number enrolled.....	48
434 E. 73rd St.	Attend'ce by wks..	4-4-4-17-10	4-11-5-8	12-11-15-5	7-2-4-3	1-3-4-1	7-11-11-1-8	Total attendance for month.....	173
	Ave. attendance....	8	7	11	4	2	8	Average attendance (26 classes)....	7
	Time of Consult'n.	3 p. m.	3 p. m.	3 p. m.	3 p. m.	3 p. m.			
	Number enrolled...	13	9	11	5	10		Total number enrolled.....	48
246 E. 82nd St.	Attend'ce by wks..	16-15-5-16-14	7-4-12	15-16-13-6	8-6-5-2	12-12-12-14		Total attendance for month.....	210
	Ave. attendance....	13	8	12	5	12		Average attendance (20 classes)...	11
	Time of Consult'n.	2.30 p. m.			2.30 p. m.	2.30 p. m.			
	Number enrolled...	7			13	13		Total number enrolled.....	33
146 W. 100th St.	Attend'ce by wks..	6-7-7-6			13-13-20-12	11-13-12		Total attendance for month,.....	120
	Ave. attendance....	7			14	12		Average attendance (11 classes)...	11
	Time of Consult'n.	2 p. m.	3 p. m.	3 p. m.	3 p. m.				
	Number enrolled...	7	7	10	3			Total number enrolled.....	27
412 W. 47th St.	Attend'ce by wks..	7-12-5-10	1-11-6-8	12-4-18-3	3-3-8			Total attendance for month.....	111
	Ave. attendance....	8	7	9	4			Average attendance (15 classes)..	7

CONSULTATIONS NOT CONNECTED WITH MILK DEPOTS

	Time of Consult'n.	4 p. m.	4 p. m.	4 p. m.	4 p. m.				
	Number enrolled...	20	10	12	13			Total number enrolled.....	55
173 W. 63rd St.	Attend'ce by wks..	14-19-13-12-16	8-1-4-4	10-10-10	4-11-9			Total attendance for month.....	145
	Ave. attendance....	15	4	10	8			Average attendance (15 classes)...	10
	Time of Consult'n.	2 p. m.	2.30 p. m.		2 p. m.	2 p. m.			
	Number enrolled...	15	12		16	15		Total number enrolled.....	58
248 E. 105th St.	Attend'ce by wks..	10-11-11-12-7	7-7-9-8		11-15-10-11	7-12-12-9		Total attendance for month.....	169
	Ave. attendance....	10	8		12	10		Average attendance (17 classes)...	10

*Depot at 160 Mott St. **Depot at 262 East Broadway

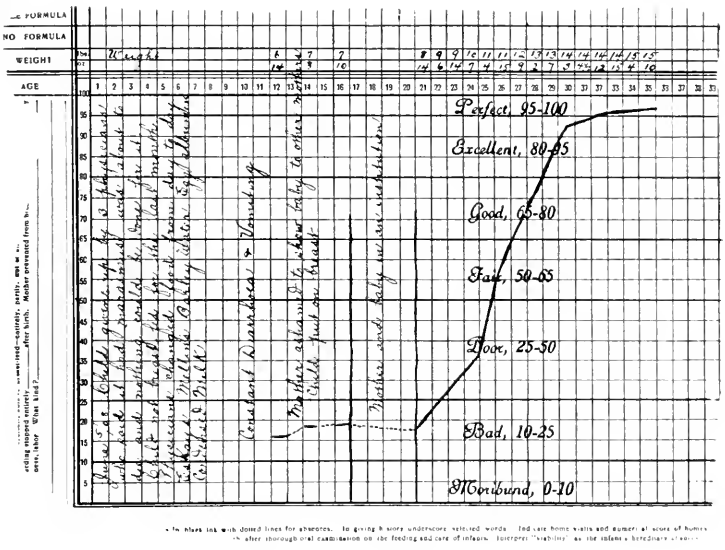
THE STATISTICAL SIDE OF THE WORK.

In planning the statistical side of the work, the determining factor was the necessity of obtaining facts which would tell a definite and concrete story. To say, for instance, that of fifty babies fed at a certain depot, fifteen did well, twenty did fairly, ten did poorly and five died, signifies absolutely nothing unless it is known exactly in what condition those babies were when they were first taken in charge. Were they in perfect condition? Then the report was one deserving severe criticism. Were they in dying condition? Then it was excellent.

To overcome this difficulty and to secure, as nearly as possible, uniform employment of the same descriptive terms among the Committee's physicians, it was decided, after much deliberation, to use a record chart, the revised edition of which is inserted on the following page. In this chart, it has been assumed that there are seven physical classifications in which a child, brought to the depots, may be placed. A numerical estimate has been given to each of them as follows:

Moribund,	from	0—10
Bad,	"	10—25
Poor,	"	25—50
Fair,	"	50—65
Good,	"	65—80
Excellent,	"	80—95
Perfect,	"	95—100

In estimating a baby's physical condition, the doctor's judgment is thus limited by the value of the descriptive term, chosen with respect to all the others and to the upper and lower limits of zero (death) and 100 (perfect health). This still leaves a considerable range for the personal equation, but as the Committee found in experiments made before the adoption of the chart, the "estimates" of physicians, trained in infant feeding, seldom vary more than from 10 to 15 points. With less trained workers there is likelihood of a wider discrepancy, but even among these, experience indicates, the variation can be minimized by uniformly holding certain chief characteristics in mind.



ONE BABY'S HISTORY

As told by the Committee's record charts.

On June 5, Barry O'Shea, 12 weeks old, came to the depot in Bloomingdale Guild on the point of death. Almost the only thing he had *not* been fed on was mother's milk. Instead of putting him on the Committee's modified milk, Dr. Wile, senior physician at the depot, persuaded the mother to increase her own nourishment and nurse Barry herself. By so doing the Committee lost a customer but saved the life of Barry O'Shea.

Observe (*a*) that Barry weighed only six pounds and 14 ounces when brought to the depot whereas he should have weighed $11\frac{3}{4}$ pounds; (*b*) that his life line rose immediately when his mother began to nurse him and to come regularly to the Committee's classes; (*c*) that he now is in "perfect health."

MORAL:—Modified Milk Stations are not to win customers but to lose them. The best milk is mother's milk.

In order to standardize the curve of general vitality the Association of Physicians, working in connection with the depots, has recently issued the following instructions: [Appendix A.]

In determining the value of work done by the physicians employing the accompanying chart, the plotting of the curve showing the relative general vitality of the child from week to week is important. This curve, which is designed to show in graphic form what would take many words to describe gives a comparison of the child under treatment with the normal healthy child of corresponding age. It is important to understand that it is *not* simply a weight curve, but that it connotes and denotes everything related to normal childhood.

While weight is an important index to the condition of the baby, an increase in weight is not the only nor an infallible criterion of normal development. Increase in weight due to œdema of the extremities (without explanatory notes), not uncommon in poorly nourished and anæmic infants, would give a false impression of improvement to the statisician. A fat, flabby, anæmic baby, brought up on a rich carbohydrate diet would, judged by weight alone, appear to be a healthy child rather than one with low resistance. And vice-versa, a very difficult feeding case might show a stationary or vacillating weight on the chart and yet gain steadily in general vitality and digestion. For these reasons, weight alone, while important, is not a sufficiently true index, to the condition of the baby.

Following are the chief characteristics which must be borne in mind:

Weight:

For easy reference, a weight curve of the normal infant under one year is printed on the chart. For practical purposes, the average weight of the normal new-born infant may be considered as 7 lbs., which is usually augmented by a pound monthly during the first year. Thus the birth weight is about doubled at six months and trebled at one year. During the second year the gain is usually less, averaging about six pounds for the year.

Skin:

Next to be considered is the skin; as to color, whether normal pink, or pale and with the veins showing through, or cyanotic, etc.; as to texture, whether firm, moist, dry, harsh, wrinkled, eczematous, syphilitic, etc.

Subcutaneous Fat:

At the same time the amount of subcutaneous fat present should be noted; well covered bones and rounded contour standing for the normal, against the familiar thin, wizened, angular, poorly nourished child.

Musculature:

The development of the muscular system is very important. Under this head should be considered the condition of the muscles

of the extremities, whether firm, flabby or paralyzed; the muscles of the abdomen, whether firm and normal or thin and ballooned out by the intestines; the muscles of the spinal column, whether, for example, the child can support its head on its trunk (by the 4th month), whether it can sit up alone (by the 7th-9th month), whether it attempts to support weight on feet (by 9th-10th month), whether it stand with support (by the 11th month), whether it begins to attempt to walk by the beginning of the second year, etc.

Bones and Teeth:

In regard to the bony system, aside from congenital abnormalities, it is important to note the time of the ossification of the sutures and fontanelles, the posterior closing normally by the end of the second month and the anterior by the end of the second year (usually eighteenth month). Signs of rachitis are to be looked for—craniotabes, bowed legs, enlarged epiphyses, contracted chest, walls, etc. The teeth in the normal child are usually cut in a certain succession, viz.: incisors, then first molars, then canines, and last second molars. Irregularity of irruption frequently denotes disease or mal-nutrition, while dentition, delayed within certain limits without other symptoms, may be an idiosyncrasy rather than an abnormality. It is commonly agreed that the normal child should have cut six incisors by the end of the first year, sixteen teeth by the end of the second year, and all twenty by the middle of the third year. Premature decay and deformities (notched teeth, overlapping teeth, etc.) must be taken into general consideration.

Mental Condition:

Another criterion of the baby's general well-being is its mental condition and development. A well-nourished baby sleeps normally and is happy and contented when its necessary wants are met. The mental development of a given child varies considerably, but, in a general way, a baby begins to notice and grasp objects by the second and third months and begins to enunciate single words by the end of the first year. "Backwardness" may be an idiosyncrasy or may, with other symptoms, point to a mental defect.

Digestion:

The child's digestive capacity is clearly an important consideration in determining its lease on life. The question of its status in relation to the food given it up to the day of each consultation; whether it is or has been breast fed; whether fed modified cow's milk or proprietary foods; how it has digested and thrived on the food given; whether it has had frequent gastro-intestinal upsets; whether the foods have had to be frequently changed, etc., must all be considered. Other things being equal, a child thriving on breast milk would be rated higher than a child thriving on modified milk or a proprietary food. In the case of a child fed on modified cow's milk, the question must be considered whether it can take care of the normal amount of fat, carbohydrate and proteid for its age and development, or whether any one or all of the elements must be considerably reduced to suit the lowered digestive

capacity. The question of the kind of carbohydrate and proteid also enters; all pointing toward a delicate digestive capacity.

Current Diseases and Deformities:

Finally the natural resistance of the child as modified by inherited tendencies, congenital deformities and previous and concurrent diseases, must be weighed. Children delicate from birth by reason of disease of parents; children with hare-lip, cleft-palate, congenital heart disease, microcephalus, hydrocephalus, spina-bifida, etc., etc., are all handicapped. Also children suffering with rachitis, syphilis, tuberculous glands and bones, etc., have a lowered resistance. A history of frequent attacks of disease, "colds," bronchitis, pneumonia, etc., shows lessened natural resisting power.

The above does not pretend to cover the ground of all that ought to be taken into the general estimation of the vitality of the child, but it ought to serve as a basis for more uniform expression of what we are trying to do.

Executive Committee,
Association of Physicians
of the New York City
Milk Depots.

From a statistical standpoint, the estimate of the condition of the baby when it is received at the depot is of the utmost importance. Given a true estimate, an agency like the Milk Committee can in a large measure determine what injury or profit the baby has received at its hands. Given a false estimate, any deduction as to what has or has not been accomplished is entirely without meaning.

In addition to the feeding history and "line of progress," the record chart originally contained other facts dealing with the question of infant mortality. Although this possessed the advantage of giving a full history of the child on one page, it proved confusing because the responsibility for filling it out rested jointly with the physician and nurse, neither of whom was under the same administrative control. Subsequently it was deemed wise to separate the statistical responsibility of the physicians from that of the nurses, leaving the *record chart* with its *physical* history to be filled out by the physician, and adding a *social card* (inserted on the following page), dealing with conditions which bear on infant mortality, to be filled out by the nurse.

It is not supposed, in obtaining the facts on this social card, that nurses, when they visit the homes, will produce the card, read off the questions, and record the answers on the spot. Such a proceeding would arouse the suspicion of mothers and make them either refuse to answer or to answer falsely. In the first case, valuable material would be lost. In the second, the material would not be such that any truthful deductions could be made from it. With intelligent parents, the method of direct questioning often proves successful, but in the great majority of cases, it is necessary to resort to the indirect or conversational method of questioning. Any nurse, in the course of her conversations with a mother, can, by a little exercise of tact and intelligence, touch practically upon every point covered in the record chart; and after short practice, can easily fill in the mother's answers from memory.

In making entries, nurses are requested to observe the following instructions:

1. **Previous Children.**

   In specifying the causes of death under this head state whether they are *certified* (that is, taken from the death certificate), *alleged* (that is, not taken from the death certificate), and *unknown*. In *alleged* causes please state source of information.

2. **Nationality of Parents.**

   In recording the nationality of parents use the following descriptive terms, noting whether persons, declaring themselves to be of one nationality, belong evidently to another; as for instance, American-German, Canadian-French, American-Jew, Canadian-English, etc. Never enter a Jew without giving the country from which he comes.

   Nationalities.

   Jew
   American
   Canadian
   Bohemian
   Slavic (Ruthenian)
   Pole
   Russian
   Finn
   Lithuanian
   Lett
   Caucasian
   Hungarian
   Balkan-Slav { Servian, Bulgarian, Croatian }
   French (incl. Belgian, French and Swiss)
   Italian (North and South)
   Spanish
   Portuguese
   English
   Scotch
   Irish
   Scandinavian { Swedish, Norwegian, Danish }

NAME: _____ ADDRESS: _____ DATE OF BIRTH: _____ CHILD Nº _____ CONSULTATION Nº _____

DATE:

HOME MODIFIED

Kind of Milk used
Treatm't of Milk
Proprietary Food
Formula
Oz per feeding
No. of feedings
Interval

Mother or Wet Nurse: No. of feedings / Interval

Commercially Modified. Kind: Treatm't of Milk / No of Formula / Oz per feeding / No. of feedings / Interval

Birth Weight: Authentic ☐ Alleged ☐ Unknown ☐ — lbs / oz

YEARS 0 1 2 3 4 5

WEEKS 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52.

WEIGHT CURVE IN LBS. — GENERAL CONDITION OF CHILD IN PER-CENT.

lbs	%
19	95
18	90
17	85
16	80
15	75
14	70
13	65
12	60
11	55
10	50
9	45
8	40
7	35
6	30
5	25
4	20
3	15
2	10
1	5
0	0

Notes.

Perfect, 95-100%

Excellent, 80-95%

Good, 65-80%

Fair, 50-65%

Poor, 25-50%

Bad, 10-25%

Moribund, 0-10%

NAR

INSTRUCTIONS FOR FILLING OUT RECORD CHART.

(Physicians)

A line of physical progress (not a weight curve) should be drawn from week to week with dotted lines for absences, based upon the weekly numerical estimate of the general vitality of the child.* The ideal weight curve of a normal child weighing seven pounds at birth, which is placed upon the chart, is to assist the physician in determining the state of the infant's nutrition.

Notes on the condition of the child should be written from the bottom of the chart upwards, parallel to the word "notes," along the vertical line running from zero to 100. Herein should be entered a record of stomach and intestinal disturbances. If the condition of the child, as indicated by the line of physical progress, fails to improve or deteriorates, the physician should carefully specify the cause. *On the fullness with which these observations are made will depend the statistical value of the chart, particularly as concerns the nutritional difference between raw and pasteurized milk.*

"Absences," as indicated by the dotted line, should be accompanied by an explanation as to *why* the mother was absent and *where* she was. This explanation will relieve the physician from responsibility in case the baby's condition failed while it was away. Similarly full explanation should be given when the line stops and the case is closed.

The spaces above the record chart are for use in recording the number, frequency and kind of feedings. It is important that the treatment of the milk used should be carefully indicated. In making record, use R for raw, P for pasteurized, and S for sterilized.

CLINICAL KEY.

The Clinical Key given below is *suggested* for the convenience of physicians who may wish to use it.

No. 1.

Milk.

(a) Milk dealer
1 Borden's
2 Clover Farms
3 Locust Farms
4 McDermott
5 Mutual Milk & Cr. Co.
6 Sheffield Farms
7 Sweet Clover Farm
8 Thorndale Farm
9 White Clover Farms
10 Briarcliff Dairy
11 Walker-Gordon
12
13 (etc.)

(b) Kind of milk†
m Milk (l—loose, b— bottled)
s Selected
i Inspected
g Guaranteed
c Certified
sk Skimmed milk
cp Commercially pasteurized
pp Perfectly pasteurized

No. 2.

Proprietary Foods.

a Allenbury's food
b Condensed milk
c Beef extract
d Benger's food
e Imperial granum
f Malted milk
g Malt feeding
h Mellen's food
i Malt soup
j Nestles food
k
l (etc.)

No. 3.

Additional Foods.

1 Orange juice
2 Beef juice
3 Soup
4
5
6
7
8
9 (etc.) (at doctor's discretion)

No. 4.

Food Constituents.

(See illustrations)
t Top milk
c Cream
sm Skimmed milk
pm Peptonized milk (+time pept.)
bm Buttermilk
cs Cane sugar
ms Milk sugar
s Salt
w Whey
sc Sodium citrate
bs Bi-carbonate of soda
bg Barley gruel
og Oatmeal gruel
wg Wheat gruel
lg Legume gruel
bw Barley water
ow Oatmeal water
ab Boiled water
r Rice water
l Lime water
d Disastase
sf Substitute feeding

No. 5.

Disturbances.

v Vomiting
c Constipation
d Diarrhoea
r Refrigeration
ir Insufficient refrigeration
nr No refrigeration (etc.)

ILLUSTRATION SHOWING USE OF CLINICAL KEY.

Sample Formula.

4.5 oz. of upper third of the milk	t 1/3
	4.5
1.4 oz. milk sugar	ms
	1.4
1.5 oz. lime water	lw
	1.5
15 oz. boiled water	ab
	15

Abbreviations.

5 cp=Mutual Milk & Cr. Co.'s Milk, commercially pasteurized.

f=Malted Milk.

t 10=10 oz. of top milk.

d 3=Diarrhoea, 3 days.

*NOTE.—For standardizing the estimates of the general vitality of infants, see separate instructions Appendix A.

†NOTE:—Graded, except for pasteurized milk, according to rules and regulations of N. Y. Health Department. By commercially pasteurized milk is meant milk *rapidly* heated at a *high* temperature. By perfectly pasteurized milk is meant milk *slowly* heated at a *low* temperature.

Printed on Yellow cardboard, 11¾x9⅔ inches.

3. **Nativity of Parents:—City or Country.**

In determining where to draw the line between a city and a country community, assume that towns of less than 3,000 inhabitants are "country" except in the case of pure factory towns.

4. **Hereditary Sickness (Alcoholism, syphilis, tuberculosis, etc.)**

As a guide in determining the absence of alcoholism, syphilis and tuberculosis, consider the circumstances of the births of previous children, the previous occupation of the parents, and the present physical conditions of the parents. In making record, state whether the presence of the sickness is *ascertained* (in which case enter as "yes"); *suspected* (in which case enter as "possibly"), or *impossible to discover* (in which case enter as "unknown"). In case there is no sickness, enter as "no." Enter all other diseases bearing upon the health of the infant, such as pneumonia, typhoid fever of either of the parents shortly before conception, etc.

5. **Kind and Daily Hours of Parents' Occupation.**

In defining the occupation of the parents use the following denominations, *adding detailed description of work:*

Denominations.

Housekeeping.
Sewing, millinery, etc. (at home for private customers).
Home industry (home work for factory).
Service away from home (in private family, restaurant, janitor or janitress, etc.).
Scrubbing away from home.
Liquor trade (bar-tending, etc.).
Permanent employment in laundry.
Temporary laundry work for private family.
Work in department store.
Office work (cashier, typewriter, etc.).
Street stand (papers, flowers, etc.).
Peddling.
Small store connected with family.
Factory with less than 20 workers.
Factory with 20 to 200 workers.
Factory with over 200 workers.

6. **Care of Mother Before and After Confinement.**

Under this head record the number of visits made by any and all nurses, and by any and all physicians up to the day of birth and between the day of birth and the time of the mother's first coming to the consultation. In confinement cases record immediately after birth the data covering the prenatal period.

7. **Weight at Birth.**

In doubtful cases place all information concerning the authenticity of the baby's weight as indicated by the mother under "alleged weight."

8. **Housing Conditions: Definitions of Terms Used in Score Card.**

District Characteristics: (See accompanying map.)

Light: Light enough to read easily in every part of the room.
Gloomy: Not light enough to read easily in every part, but enough readily to see one's way about when doors are closed.

DARK: Too dark to see one's way about easily when doors are closed.

WELL VENTILATED: With window on street or fair-sized yard (not less than 12 feet deep for a five-story tenement house not on a corner) or on a "large," "well-ventilated" court open to the sky at the top; "large" being, for a five-story tenement, for a court entirely open on one side to the street or yard, not less than 6 feet wide from the wall of the building to the lot line; for a court enclosed on three sides and the other on the lot line, not less than 12 x 24 feet, "well ventilated" meaning either entirely open on one side to the street or yard, or else having a tunnel at the bottom connecting with the street or yard.

POORLY VENTILATED: With window opening on a shallow yard or on a narrow court, open to the sky at the top, or else with 5 x 3 inside window (15 feet square) opening on a well-ventilated room in same apartment.

BADLY VENTILATED: With no window on the street, or on a yard, or on a court open to the sky and with no window, or a very small window, opening on an adjoining room.

SINK CONSTRUCTION: GOOD—Iron, on iron support with iron back above to prevent splashing of water on wall surface, in light location, used for one family. Water direct from city water mains or from a CLEAN roof tank.

BAD: Surrounded by wood rims with or without metal flushings, space beneath enclosed with wood risers; dark location, used by more than one family; water from dirty roof tank.

POOR: Midway between above two extremes. (Sinks not exactly coinciding with any of the three classes are to be included in the one, the description of which comes nearest to the condition.)

WATER CLOSET CONSTRUCTION: GOOD—Indoor closet. In well-lighted and ventilated location, closet fixture entirely open underneath, abundant water flush.

FAIR: Indoor closet, poor condition. Badly lighted and ventilated location, fixture enclosed with wood risers, or poor flush.

POOR: Yard closet—Separate water closet in individual compartment in the yard.

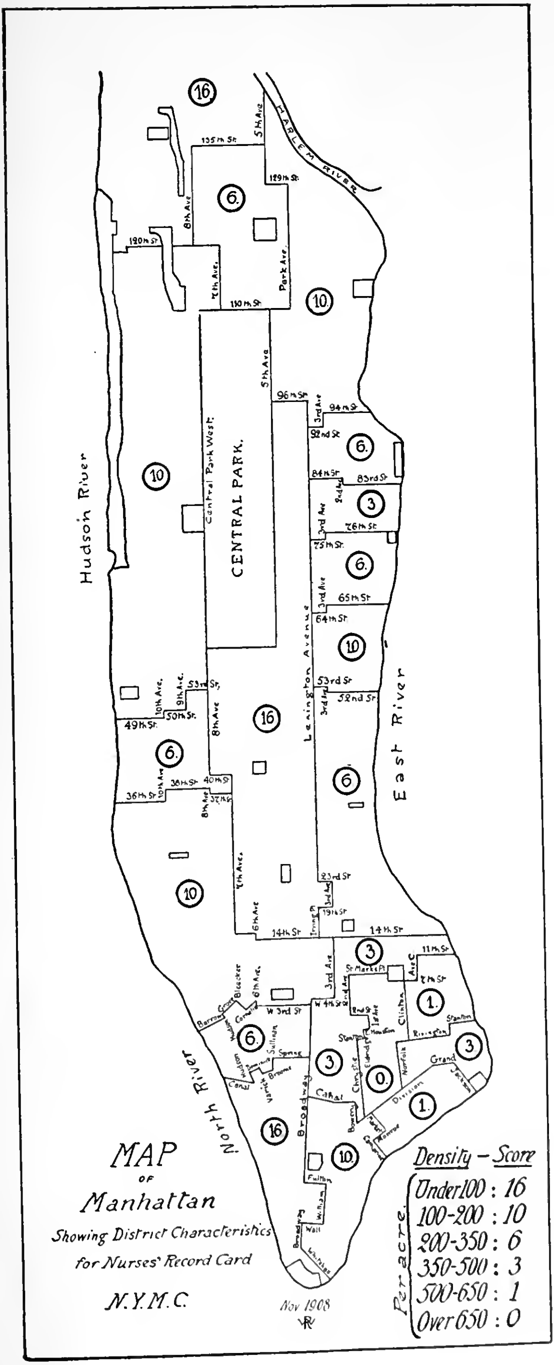
BAD: School sink—Sewer-connected privy, having one continuous vault beneath the row of individual toilet compartments.

9. Home Life. (Score Card.)

Base your estimate of household cleanliness, personal cleanliness, and good food, upon your own experience and understanding of the sanitary and hygienic conditions under which a family can live a normal and healthful life.

10. Knowledge of Infant Hygiene.

Measure the mother's knowledge of infant hygiene according to her knowledge of the information contained in Miss Mariana Wheeler's "Plain Hints for Busy Mothers." Score mothers who know and use the facts contained in this book as 100 or perfect.


MAP
OF
Manhattan
Showing District Characteristics
for Nurses' Record Card
N.Y.M.C.
Nov 1908
Density – Score
Per acre
Under 100 : 16
100-200 : 10
200-350 : 6
350-500 : 3
500-650 : 1
Over 650 : 0
Hudson River
East River
North River
Harlem River
CENTRAL PARK
Central Park West
Lexington Avenue
Broadway
135th St.
5th Ave
129th St.
8th Ave
120th St.
7th Ave.
Park Ave.
110th St.
5th Ave
96th St
94th St
3rd Ave
92nd St
84th St
83rd St
2nd Ave
76th St
75th St
65th St
64th St
53rd St
52nd St
53rd St.
9th Ave.
10th Ave.
50th St.
49th St.
8th Ave
40th St
38th St
37th St
36th St
23rd St
19th St
Irving Pl
6th Ave
14th St
11th St
St Marks Pl
Ave C
7th St
W 4th St
W 3rd St
Bleecker
Barrow
Grove
Cornelia
Sullivan
Spring
Canal
Varick
Broome
Stanton
Rivington
Grand
Jackson
Division
Clinton
Norfolk
Chrystie
Bowery
Fulton
William
Wall
Whitehall

11. General Intelligence.

Base your estimate of the "General Intelligence of the Mother" upon what you consider to be her *practical knowledge,* as expressed in her ability to run the household on the most rational and hygienic basis possible under her income.

12. Cases of Sickness in Household.

Record each case of sickness in the family during the period of the mother's care for the infant. State whether such sickness, by distracting her attention and by imposing additional work upon her, has a bearing on the condition of her child.

13. Remarks.

Enter under this head all happenings in the family which, in your judgment may have a bearing on the infant's health and which are not included in the questions on the chart; in this respect, consider no detail superfluous.

In order to impress upon the nurses the value of the statistical side of the work, the Committee has added the following preface to its instructions:

INSTRUCTIONS FOR NURSES.

The main purpose of social and charitable work is not so much to relieve people in suffering as to prevent suffering. No preventive measure can be taken without knowing exactly what social conditions produce the suffering which it is hoped to alleviate.

The New York Milk Committee, in organizing and maintaining its milk depots, aims to combat the abnormally high death rate among infants in the congested districts in this city. This high death rate is due principally to five causes: hereditary weakness, poverty, industrial conditions, impure milk and ignorance. These causes are all remediable, but they are changed neither easily nor quickly. To destroy poverty, to banish ignorance, to foster industrial unselfishness, to secure a clean milk supply and to develop a new and stronger generation, is a problem of slow and tedious education. Not only the poor but the rich as well must be taught the necessity of these things. If reason and persuasion do not win them, then public opinion must be brought to aid. To arouse public opinion, one must *convince* the public that conditions ought or ought not to exist. The battle then becomes an argument; both sides present their cases; and the best side wins. In this struggle, hearsay, opinion, and information which cannot be relied upon are of no avail. Facts alone have weight. These facts must be unquestionable. As nearly as possible they must be absolute. If they are untrustworthy, and easily disproved—if the case cannot be won on them—they are useless.

The duty of collecting facts therefore is most important, for on it depends all social, physical, industrial and moral advancement. Each individual collector, however insignificant his or her work may seem,

contributes definitely to this great movement, and by each added figure piles up the sum of evidence which is necessary to change conditions.

The facts sought by the New York Milk Committee have been selected under advisement of an expert statistician and after conferring with many authorities on Infant Mortality. In the case of Society versus Poverty, Ignorance, Cupidity and Disease, each of these facts, as far as trained knowledge can decide, is indispensable. Taken together, they constitute a chain of evidence which will secure a verdict in direct proportion to the strength of each link. It is essential therefore, not to get half or two-thirds or even nine-tenths of the facts striven for, but to get them all.

The Committee has sought to arouse a personal interest in statistics on the part of the nurses by the following questions:

1. **Nationality of Parents.**

Should immigration be checked?

Are some nationalities more desirable than others? More immune against disease? Which ones? Why?

Do you believe it is more difficult to save the lives of Italian and Yiddish babies, than to save the lives of American babies?

Do you think that a wider knowledge on these matters would help remedy conditions?

Fill out the record charts.

2. **Urban and Rural Nativity; Residence of Parents.**

Is the country healthier than the city?

Does city residence shorten the period of life?

Is it either natural or desirable to live in congestion?

Should conditions in congested districts be remedied or should people be induced to leave such districts?

What do you think is an ideal place in which to live?

Would you like others to think as you do?

Fill out the record charts.

3. **Kind and Daily Hours of Parents' Occupation.**

Does employment (its kind and hours) affect the pregnant mother? The nursing mother? The baby?

Does the father's salary have any effect upon the mother and child?

Do you know of any mother whose work is injurious to herself and to her child?

Would you like others to realize certain conditions as you realize them?

Fill out the record charts.

4. **Previous Sicknesses in Family.**

Do you believe in heredity?

Can the next generation be made stronger than the present generation?

Does Society pay for immorality? For drunkenness? For tuberculosis? How?

Would you like others to share your own definite ideas on these matters?

Fill out the record charts.

5. **Illiteracy.**

Is education desirable?
Is it responsible for health, for happiness, for life?
Would you like to see any of your mothers better educated? Why?
How could this be done?
Does every one think as you do on these matters?
Fill out the record charts.

6. **Care of Mother Before and After Confinement.**

Is it true that mothers need care before and after confinement?
Do you know of any mother who suffered because she did not receive such treatment? How?
Did it affect her infant?
What could have been done to help her?
To help other mothers under similar conditions?
Would it be well if Society understood some of these matters as you understand them?
Fill out the record charts.

7. **Housing Conditions.**

Are rents too high in the neighborhood in which you work? Is the neighborhood congested?
Are the houses in good condition? Are they overcrowded?
Would you like to live in the neighborhood? In the houses? If not, why not?
Whose fault is it that these conditions are not better?
Do these conditions affect any of the babies that come to you?
Do you wish to help in changing these conditions?
Fill out the record charts.

Home Life.

Do the mothers who come to you know how to cook?
Do they keep house as well as your own mother?
How many clean, well-fed families are there on your list?
Why are not the dirty families clean and well-fed?
If they were clean and well-fed, would they be happier? Healthier?
Would they live longer?
Would you like to assist them to become cleaner and better fed?
Fill out the record charts.

THE PHYSICIANS—THEIR WORK AND ORGANIZATION.

On August 31, twenty-nine volunteer physicians were engaged in instructional work connected with the depots. At their classes, these doctors, assisted by the nurses, weigh the babies, prescribe the feedings, and instruct the mothers in infant hygiene. On July 21st, the physicians organized themselves into "The Association of Physicians of the New York City Milk Depots." The objects of this Association (quoted from its constitution) are as follows:

(a) The reduction of infant mortality by the encouragement of breast feeding and the education of mothers in infant hygiene.

(b) The gathering of information which will make a more intelligent and effective campaign against infant mortality possible.

(c) The working out of the principles of infant feeding and a system of hygienic instruction to mothers, capable of general expansion and development.

(d) The bringing about of a spirit of coöperation and mutual assistance on the part of physicians, milk dealers, and all persons interested in social, physical, and moral progress.

The Association chose for its chairman Dr. G. R. Pisek, Chairman of the Pediatric Section of the Academy of Medicine, who has taken an active interest in the Committee's work from the beginning, and who personally organized and supervised the work of its East 73rd Street depot. In order to coördinate all branches of the work, the Association also, by a suspension of its constitution, first elected Mr. Phillips, Secretary of the Milk Committee, to its membership and then made him its secretary and delegate to cooperating organizations. The executive committee, consisting of five members, including the chairman and secretary, directs and supervises the instructional and statistical administration of the depots. This committee consists of Dr. Pisek, Mr. Phillips, Dr. Ira S. Wile, Secretary of the Riverside District of the Charity Organization Society, Dr. Herman B. Sheffield of the Yorkville Dispensary, and Dr. Anna I. Von Sholley, visiting physician of

the N. Y. Infirmary and the only woman physician in the Association.

The meetings of the Association held so far have been unusually well attended, and show a keen interest on the part of the physicians in the work which they are helping the Committee to carry on. The instructions for filling out the physicians' feeding chart, and for standardizing the curve of general vitality (already described under the head of statistics), were both drawn up by the Association, which, in addition, is now taking up the matter of the conduct of the consultations, of limiting the instructional capacity of the depots, of appointing senior physicians to consult with the younger men, and with the assistance of an expert statistician, of perfecting the statistical side of the work, so that no part of the year's effort will be lost. It is also planning a series of lectures on infant feeding and infant hygiene, to be given to its members and other physicians who may care to attend, by physicians making a specialty of these subjects. Later it will make a report on its work.

THE FINANCES OF THE DEPOTS.

(1) Initial Expenditures, Equipment, Etc.

In equipping its laboratory, the Committee tried to be as economical as was consistent with thorough work. To avoid the labor of ordering each separate machine, it placed an order for the general equipment of its laboratory with the Dairy Machinery and Construction Co. of Shelton, Conn., reserving for itself the work of ordering crates, bottles, corks, refrigerators, and a few other items.

Mr. Horton, President of the Sheffield-Farms-Slawson-Decker Milk Company, acting under the terms of his contract, provided the Committee with two delivery wagons, which, with horses and harnesses, represent an expenditure of about $1,000.00.

The time it saved in these matters did not relieve the Committee from a great deal of anxiety and responsibility.

Inasmuch as the glass factories closed in June, and did not open until the middle of September, the Committee, which was unable to foresee the number of babies which it might be called upon to feed, placed an order for bottles considerably in excess of the actual number which it needed. The supply, however, is sufficient to last it for some time—for a year at least. Similarly, ignorance and caution prompted the ordering of too many crates. These surplus expenditures are interesting because they were made at the advice of those who had had wide experience in infant feeding. The Committee knew that other modified milk dispensing agencies, even those operating for only a few months in the summer, were as a rule deluged with babies. But it did not take into sufficient account, the consequence either of the emphasis which it had determined to place upon breast feeding as opposed to bottle feeding, or of the fair price for an expensive milk which it had determined to charge. Contrary to the usual experience, the depots, although located in congested quarters of the city, came through the first quarter of the year with a daily average of less than fifty babies to the depot. This, the Committee believes, is a result to be proud of, rather than deplored. Its main object, in other words, is not to increase, but to decrease, the number

of bottle babies, and once it has ascertained the actual number of bottle babies in the neighborhood, a rise in the sale of modified milk is an indication of failure.

The bottles selected are in three ounce, six ounce, and eight ounce sizes, similar to the Straus bottles, with rounded bottoms, short necks and a wide spread at the top, permitting easy access of water and brush for sterilizing purposes. Grooved corks are used for filling, and are thrown away after each service. At the depots, mothers are required to make a deposit of two cents on each bottle. This encourages care in handling, and saves the Committee considerable loss in breakage. In spite of this precaution, however, the average life of a bottle, as nearly as can be estimated, is less than ten fillings. This is no doubt due to the large amount of handling required by the Committee's system of individual prescriptions. It may also be caused in part by the tightness with which the bottles fit into some of the crates. The latter are of three sizes, adapted to the three sized bottles. They are hand made, of galvanized iron, making an open framework for the bottles, through which the water runs, leaving the crates dry and clean. It would have been much better if the crates had been of the same size and if the compartments for individual bottles had been made on an equal center, so that the three ounce, six ounce and eight ounce bottles would have adapted themselves exactly to the same filling and sterilizing machines. This is one of the experiences which the Committee has paid for and which it tells in order that others may not repeat its mistake. As it is, there are two compartments, not only in the bottle filler, but also in the bottle washer—one compartment having plungers fitted to the three ounce and six ounce bottles, and the other compartment having plungers fitted to the eight ounce bottles. From the combined standpoint of delivery, packing, filling, washing, and space occupied, the economy of similar sized crates built on common centres for all bottles is apparent.

In order to modify the milk in individual prescriptions, Mr. Joseph Willman, President of the Dairy Machinery and Construction Company, devised a bottle filler capable of filling any quan-

tity desired, from one half an ounce to eight ounces. This machine was constructed after two months' delay, but proved inadequate, inasmuch as the mechanical arrangement for changing from one quantity to the other was too complex to admit of speed and facility in operation. Several improvements were suggested and have since been successfully incorporated in its mechanism. As it stands to-day, the machine has cost Mr. Willman $2,400. In his bill he has charged the Committee $1,500. During its construction, the Committee filled its bottles with a small hand machine—a slow and expensive operation. The new machine, can supply easily many times the number of babies that are now being fed.

In furnishing the depots, the central problem was the refrigerator. This, as finally adopted, was a long box, 33½ in. wide, 77 in. long, and 25 in. deep, with covers sliding over each other, and a central ice compartment sufficiently raised from the bottom to admit three of the smaller crates underneath. The chief objection to this box is the difficulty of lifting the crates in and out (entailing a great deal of back-bending and fatigue on the part of the person handling the milk) and the necessity of constantly throwing the top open, thus letting out the cold air and reducing the temperature. The latter objection is offset by the fact that the milk comes to the depot liberally covered with cracked ice, and that in most cases it is dispensed shortly after its arrival. The temperature, therefore, remains uniformly between 45 and 50 degrees. Another objection to the refrigerator is that owing to its great bulk it takes up valuable space in the depot.

The Committee has under consideration a refrigator built on the plan of a cabinet, with separate drawers for each crate, and a compartment for cracked ice to be used in keeping the bottles cool between the depot and the home. Such a refrigerator would occupy comparatively little space, would permit each formula to be kept separately, and would greatly relieve the person handling the bottles.

Inasmuch as no whole milk was sold in the depots, the other expenses connected with installation consisted of little more than a table, a cash drawer, stationery, signs and incidentals.

(2) The Business Maintenance of the Depots.

In order to determine in how far the depots could be made self-supporting, a price was placed on the milk sufficient, as nearly as could be estimated, to pay running expenses, on a basis of seven depots supplying fifty babies each. In determining this price, the salaries of the nurses, their incidental expenses, the cost of printing, statistical and educational work, were not included, as it was felt that they properly belonged to social or philanthropic expenditures, and ought not to be made a charge against those mothers who, because of their inability to breast feed their infants, were compelled to purchase milk.*

The Committee has been paying 8¾ cents a quart for its raw milk, and has been selling it (modified) at the following rates:

Feedings up to	1	ounce	.....	1½ cts.	a feeding
½	oz.	2	oz.	1 cent	"
2½	"	3	"	1½ cts.	"
3	"	5½	"	2 cents	"
6	"	8	"	2½ cts.	"

At first it was difficult to obtain these prices. Almost every one thought the rates were too high. Several churches and charitable organizations refused to pay more than "six cents" a quart, saying they could get ordinary store milk for that price. Poor mothers also were slow in purchasing the milk and in many cases persuasion in the form of relief was necessary. Later, as the work of the depots and the quality of the milk became known, it was found less difficult to obtain the full price, even from the poorest mothers. In other words, these women had been educated to realize the vital importance of pure milk.

[* It must also be remembered that the Committee was receiving the equivalent of $170 monthly from the Sheffield-Farms-Slawson-Decker Milk Company in the use of its laboratory, steam, water, etc.; that the depreciation on its equipment, amounting to $60 monthly, and the interest on its invested money, amounting to $50 monthly, was not included, and that it paid rent for only the Mott Street depot and in that instance only half rent, the remainder being paid by the Diet Kitchen Association.]

During the month of August the receipts from the sale of the milk were $212.44 less than the expenditures—that is to say, although the expenditures were greatly reduced by the contributions already referred to, and although more than 50 per cent. of the actual receipts came from relief agencies, the price asked for the milk failed to represent the cost and effort of producing a commodity essential to the health and lives of the babies using it.

(3) Relief: Its Method of Dispensation.

In giving relief, the Committee aimed at just and efficient discrimination. It proposed, by selling its milk at a fair price and by coöperating with the relief department of the Association for Improving the Condition of the Poor, which considered it *pro tempore* in the light of a retail milk enterprise, to help those and those only who needed help, aiding them entirely, partly, or not at all, as circumstances demanded. In order to do away with jealousy and discontent arising from this system, the depots required all mothers alike to pay the full price over the counter, and sold at a slighty reduced price ($0.28 worth for $0.25) the same milk tickets which relief agencies, particularly the Association for Improving the Condition of the Poor, gave, free of cost, after a careful investigation. In this way, those who received assistance were placed on an equal footing at the moment of purchase with those who paid the full price. No distinction was made between tickets and cash, and every effort was made to place the responsibility for getting the price for the milk (whether in tickets or cash or both) upon the mother.

The difficulty of this arrangement was the necessity of constant visits, and, in the case of the Association for Improving the Condition of the Poor, the employment of special relief visitors to keep mothers supplied in advance with tickets. This involved a big expense, which would have been unnecessary if the mothers had been permitted to pay in cash at the station the sum which the visitor on her first visit had decided they were able to pay, and if the matron had thereafter rendered a bill for the balance

to the supporting organization. At present the Committee is conducting its depots on this latter plan.

The psychological objections to a system where mothers pay different amounts for the same commodity, although they may obtain with respect to whole milk, which is sold in bulk at ordinary prices, are not inherent in the sale of modified milk where the computation of the price of varying kinds and quantities is too difficult for ignorant mothers. At the end of August, 144 mothers were paying the full price of the milk; 68 mothers were paying part price, and 110 mothers received it free.

(4) Cost of the Educational Work.

Except for the salaries of the nurses, which amount all told to $675 monthly, the expenses connected with the educational part of the Committee's programme have not been great. This is due largely to the physicians who have given the Committee service, which, if it had paid for, would have cost it many hundreds, if not thousands of dollars. From 50 to 100 hours of time alone is contributed by them weekly in their thirty-six consultations. Their personal efforts can never be repaid. Many of them devoted hours of labor, outside of their consultations, to constructive features of the work, and at the sacrifice of their own interests, helped the Committee in its medical, statistical, and sanitary problems.

A summary of the Committee's receipts and expenses from June 1st to August 31st follows:

FINANCIAL STATEMENT OF INFANTS' MILK DEPOTS, JUNE 1 TO AUGUST 31, 1908.

Equipment:		
Equipment at Central Laboratory	$6,015.41	
Equipment at depots	350.02	
Painting and plumbing at depots	132.31	$6,497.74
Business expenses:		
Rent (3 months) ½ share 160 Mott Street	$37.50	
Printing, stationery and postage	63.58	
Ice	118.19	
Telephone	20.45	
Cleaning, supplies, etc.	30.54	
Milk and expenses at Central Laboratory	2,287.07	
	$2,557.33	
Less milk sales at depots	1,970.90*	
Deficit	$586.43	586.43
Educational and Charitable:		
Record charts, printing, etc.	$179.36	
Carfares	13.45	
Scales, etc.	109.26	
Salaries of nurses and helpers (3 months)	2,148.67	2,450.74
Administrative:		
Salaries at Central office	745.72	
Printing, office expenses, etc.	491.57	
Rent of Central office	33.63	1,270.92
Total expenditures		$10,805.83
Contributions received April 1 to August 31, 1908		2,411.10
Total deficit		$8,394.73

EXPENSES OF MILK DEPOTS FOR MONTH OF AUGUST, 1908.

Total number of babies fed, on August 31 318
- 140 paid full price
- 68 paid part price
- 110 received entire relief

Total number of bottles sold on August 31 1,848

MILK SALES FOR THE MONTH OF AUGUST:

412 West 47th Street	$81.56	
146 West 100th Street	108.30	
246 East 82nd Street	159.23	
434 East 73rd Street	151.25	
262 East Broadway	200.78	
73 Cannon Street	138.79	
160 Mott Street	189.87	$1,029.78

[* This includes $907.07 which was paid by relief societies.]

BUSINESS EXPENSES FOR MONTH OF AUGUST:

Rent (160 Mott Street) ½ share	$12.50	
Ice	74.63	
Cleaning, supplies, etc.	18.04	
Telephone	8.85	
Stationery and postage	8.61	
Milk and expenses at laboratory	1,119.59	$1,242.22
Deficit for month		$212.44

CASH ACCOUNT:

Milk sales in month of August	$1,029.78	
Owing from previous month	69.07	$1,098.85
Cash receipts at depots	$458.14	
Paid by relief agencies	569.62	
Still owing	71.09	$1,098.85

NOTE. The Committee paid $1.75 per gross for its three ounce bottles; $2.45 per gross for its six ounce bottles, and $2.65 per gross for its eight ounce bottles. All the bottles were lettered "The New York Milk Committee." The mould for the three ounce bottles cost $13; for the six ounce bottles $16; for the eight ounce bottles $18. The first instalment of corks cost 16½ cents per gross and the second instalment 16 cents per gross. The first instalment of crates cost $2 each and the second instalment $1.50 each. These crates are hand made of iron. To have made them by machinery would have necessitated the casting of a die costing $2,000. There are three sets of crates and bottles in use constantly (one set in the depots, one in delivery, and one in the laboratory). At time of writing, the Committee is using daily, to feed 375 babies, 900 three ounce bottles, 3,600 six ounce bottles and 2,100 eight ounce bottles; 45 three ounce crates, 180 six ounce crates and 90 eight ounce crates.

The cost of the other articles of equipment was as follows: one sterilizer $325; two copper boilers $125 each; one separator $86; one bottle-washer $550; one bottle-filler $1,500; 40 wire covers $24; two wire baskets $7; one hand bottle-filler $7; scales, crocks, pails, etc. $25; lumber, fittings and labor $425.

The Committee uses Cereo Company's barley, sterilized, standardized and put up in one pound packages costing 12 cents each. Experience seems to indicate that barley in the barrel is likely to spoil. Milk sugar costing 12 cents a pound in 200 lb. barrels was used at first. This has been changed to cane sugar on account of the expense.

"Tongue Out"

A Class for Colored Mothers

MOTHERS ARE EAGER TO LEARN

In the Heart of the Upper East Side
AFTER THE DOCTOR'S TALK

THE WORK OF THE NURSES NOT CONNECTED WITH MILK DEPOTS.

In order to compare the work of the depot nurses with nurses not connected with depots (as provided in Experiment No. 2), three nurses were originally engaged to do independent field work. At the end of two weeks, one of these nurses decided that she was unequal to the task, and her conclusion seemed to be borne out by the fact that at the end of two weeks of effort in a district whose population for seven blocks was upwards of 25,000 people,* not a single mother was present at her consultation. This incident is referred to because it illustrates the difficulty of organizing consultations without the attraction of milk.

At this time, too, the hot weather came on, and the depot nurses, who were working seven days a week, and putting a great deal of themselves into the work, began to find themselves very much run down. The Committee therefore decided to use the successor to the unsuccessful nurse as a substitute to relieve the depot nurses one day a week, leaving two nurses for the purely educational work. These two nurses had their headquarters, and conducted consultations at the following places:

248 E. 105th Street, Jewish and Italian district, room in Union Settlement, rent free.

173 W. 63rd Street, Negro district, San Juan Hill, room in St. Cyprian's Chapel, rent free.

The work of these nurses has been similar to that of the nurses in the depots, except that the doctors have taught the mothers how to prepare their own formulæ from milk which has been purchased from the ordinary milk dealer, and that the nurses have thus been able to devote to actual visiting the time and effort which the depot nurses have been compelled to give to dispensing milk and rendering accounts. Many of the mothers who came under the care of these nurses were referred by them to the depots of the Diet Kitchen Association, located in 205 West 62nd Street and 1,636 Lexington Avenue, where they

[* The Jewish district on the lower East Side bounded by East Houston Street, Avenue A, East Fourth Street, and Avenue D.]

were provided free with certified milk. At the advice of the doctors, both the certified milk and the ordinary store milk was in a majority of cases "boiled" in the home.

Both outside nurses experienced difficulty in getting ignorant mothers to attend their classes regularly. They found that they had no "hold" upon these mothers, and that the easiest, and in some cases the only, way to secure their attendance was to give them free tickets for milk or fresh air excursions, provided for distribution by various philanthropic agencies. Both nurses steadily felt that they could reach more of the mothers who really needed assistance if they could connect themselves in some way with the dispensation of milk. They wished the whole milk as well as the modified milk, however, believing that, in many instances, the mothers could prepare their own formulæ from the whole milk at home, without injury to their infants and with great economy to the family budget. Subsequently, applications for milk depots were received from both the Union Settlement and the workers interested in St. Cyprian's Chapel, where these nurses organized their consultations.

A STUDY OF THE RESULTS OBTAINED BY THE NURSES IN THE MILK DEPOTS AND BY THE NURSES NOT CONNECTED WITH MILK DEPOTS.

In comparing statistically the work of the nurses in the depots and those outside, it is necessary to bear in mind the following facts:

1. The "outside" nurses gave all their time to instructional and "follow-up" work.

2. The depot nurses gave a minimum of their time to instructional and follow-up work, being compelled to devote the larger share to dispensing milk, bookkeeping, and details of business and depot management. This work was especially exacting because of the novelty of the undertaking and the nurses' lack of business training, which often resulted in unnecessary confusion and labor.

3. The mothers who came regularly to the consultations for instructions only were, as a rule, more intelligent than those who were drawn to the depots and held there primarily by the milk. Instruction consequently was more effectually carried out, and the nurse met with better coöperation in the homes.

4. The babies looked after by the "outside" nurses, included weaned babies and breast-fed babies. The "risks" run in these cases was not so great as that of the "bottle" babies, fed by the depot nurses.*

In reviewing statistically the work of these two groups of nurses, the difficulty, anticipated by some at the start, that the estimates of the physical condition in which the babies were brought to the depots would vary with different physicians, thus depreciating the value of conclusions concerning their subsequent

[* In the consultations connected with Union Settlement, 39 out of 108 babies received up to August 31, or 36%, were breast-fed; in the consultations connected with St. Cyprian's Chapel 49 out of 97 babies received up to August 31, or 50%, were breast-fed.]

condition, was substantiated in a few cases. The general results, however, were encouraging and showed the value of the Committee's record charts for statistical purposes. Of seven babies who died at the depot in the Yorkville dispensary, the estimates were as follows:

Case I — 15% (bad)
Case II — 45% (poor)
Case III — 35% (poor)
Case IV — 20% (bad)
Case V — 10% (moribund)
Case VI — 20% (bad)
Case VII—no estimate (took milk 3 days).

In the East 73rd Street depot, on the other hand, of four babies who died, the estimates were:

Case I — 75% (good)
Case II — 50% (poor)
Case III — 75% (good)
Case IV — 60% (fair)

Here, obviously, one of two things happened. Either the physicians overestimated the condition of the babies, or the milk itself was at fault. Looking into the two cases estimated at 75, we find that the first died of pneumonia, after an attack of bronchitis (its mother had pulmonary tuberculosis), while the second, whose mother's intelligence was estimated at 85 and whose home life at 81, died of gastro-enteritis, after attending two classes and getting the milk thirteen days. The history of the first case lifts responsibility from the milk and the depots; that of the second points to the milk as the causative factor.*

[* Where mothers are *ignorant*, it is exceedingly difficult to fix the depot's responsibility for the effect of milk which it sells on babies using it. One woman, for instance, complained that the milk was "No good"; her baby had diarrhoea. The nurse called, and found currant seeds in the stools. "Yes, she had fed the baby currant cake and a little watermelon and tea, too," the mother said. Another complained because a cockroach had been found in the bottle. On calling, the nurse noticed the nipple on the floor in the corner. Stooping to pick it up, several lively fellows rattled up the wall. These cases show how many other factors enter into the problem and of how little avail the best milk is when the mother lacks intelligence.]

When a condensed milk baby rated at 10 (or moribund) is brought to the depot as a last resort, its death from gastro-enteritis, after attending one consultation and getting the milk one day, is not remarkable.

In the week ending August 31st, three hundred and nineteen babies attended consultations connected with the milk depots, and one hundred and thirty-seven attended consultations given by the outside nurses. Following is a statement of the condition in which these babies were found at their last weighing.

Babies who were weighed at consultation, week ending Aug. 31, 1908:

	Pasteurized Milk		Raw Milk		Both Kinds		Independent Consultations	
Gaining	127	81.4%	120	73.6%	247	77.4%	95	69.4%
Stationary	8	5.1%	23	14.1%	31	9.7%	19	13.8%
Lost	21	13.5%	20	12.3%	41	12.9%	23	16.8%
Total	156	Total	163	Total	319	Total	137	

From the above figures, it appears that 77.4% of the depot babies were gaining at the end of the summer against 69.4% of the babies who came to consultations not connected with milk depots; that 9.7% were remaining stationary as against 13.8%, and that 12.9% had lost as against 16.8%—this, in spite of the fact that many of the babies who came to consultations not connected with milk depots, were getting certified milk from the Diet Kitchen Association, and that other factors, mentioned at the beginning of this section, appeared to favor the physical progress of these infants.

The *mortality* in the depots and independent consultations tells a different story—four deaths having occurred in the independent consultations as against thirty-three in the depots. In how far this difference was due to the greater personal attention of the independent nurses, to the greater number of breast-fed babies under their supervision, to the excellent character of the Diet Kitchen milk which many of the others received, or to the fact that the milk depots *attracted* many infants already on the point of death, is a matter of opinion. It is not improbable, judging

from the relative physical improvement of the infants cared for by both kinds of nurses at the end of August that these factors had considerable weight; but this does not detract from the good showing of the independent nurses, whose work, as will be shown later was conducted at a great economy over that of the depot nurses.

Of the 37 deaths which occurred among the babies brought to the depots and to the independent consultations, the organization of physicians working in connection with the depots has estimated that the Committee was *apparently* responsible in two cases, *possibly* responsible in one case and *evidently not* responsible in thirty-four cases.

Apart from figures, the opinion of those who have acquainted themselves with the Committee's work has been most gratifying. Dr. Pisek said recently that he would rather keep a baby in the city in hot weather, on the Committee's milk, with the mother attending the consultations, than send it, with the usual change of diet, to any hospital or seaside resort; and the physicians working on the East Side have often said that an extension of the work as carried on now in the Committee's depots in Cannon Street and East Broadway would be the biggest blessing ever conferred upon the poor people in that quarter of the city. With all this, however, there are many things to criticise and the Committee not only criticises itself, but invites criticism, to the end that it may attain the ideal toward which it is imperfectly striving.

One of the interesting facts brought out by the summer's work is the results that have been accomplished with a minimum of visiting, emphasizing the value of the group or class method of education. In August, one of the depot nurses made only twelve visits. Yet this nurse was one of the Committee's hardest and most effective workers. In her case, as with each of the others, much corrective, preventive and instructional work was done *in the depot,* and especially at the time of the daily distribution of milk, The opportunity of seeing all the mothers each morning was of great assistance in following each individual case, and of demonstrating the old adage, "an ounce of prevention is worth a pound of cure."

	NO.	
MILK DEPOTS.	1	43
	2	
	3	
	4	
	5	73
	6	
	7	
	8	
	9	
	10	2
	11	
	12	
	13	
	14	
	15	
	16	
	17	1
	18	
ASTEURIZED ILK DEPOTS.	1	1
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
ONSULTATIONS OT CONNECTED ITH MILK DE-OTS.	1	
	2	
	3	
	4	

TABLE OF DEATHS OF INFANTS AT RAW AND PASTEURIZED MILK DEPOTS AND AT CONSULTATIONS NOT CONNECTED WITH MILK DEPOTS, JUNE 18—AUGUST 30, 1908.

	NO.	MILK DEPOT.	NATIONALITY.	AGE WHEN BROUGHT TO DEPOT. WEEKS.	DISEASE WHEN BROUGHT TO DEPOT.	EST. COND. WHEN BROUGHT TO DEPOT.	EST. INTELLIGENCE OF MOTHER.	EST. HOME LIFE.	FEEDING. BREAST, PARTLY BREAST, BOTTLE.	MOTHER ABLE TO BREAST-FEED.	BREAST-FEEDING PREVENTED BY	TIME BOTTLE FEEDING BEGAN AFTER BIRTH.	EMPLOYMENT BEFORE CONFINEMENT.	NO. OF CONSULTATIONS ATTENDED.	DAYS ELAPSING BET. FIRST AND LAST DAY MOTHER RECEIVED MILK.	DAYS MOTHER ACTUALLY RECEIVED MILK.	INTER-CURRENT ILLNESSES.	CAUSE OF DEATH.	REMARKS.	ESTIMATE* OF COMMITTEE'S RESPONSIBILITY.
RAW MILK DEPOTS.	1	434 E. 73d St.	Bohemian	29		75	75	63	Bottle	Not at all	Disease	At once	Light	6	75	73	Vomiting, diarrhoea, bronchitis	Pneumonia	Mother has pulmonary tuberculosis	No
	2	" "	German	81		50	90	75	Bottle			5 mos	Light	1	5	5	Conjunctivitis, burns, marasmus, vomiting & diarrhoea	Gastro-enteritis	Child just brought home from Post Grad. Hospital	No
	3	" "	Bohemian	4		75	85	81	Partly	Partly	Lack of milk	At once	Light	2	13	13	Diarrhoea	Gastro-enteritis	Child taken to private physician. Mother advised to breast-feed entirely	Apparently
	4	" "	American	9		60	90		Bottle	Not at all	No milk	At once	Severe	1	2	2		Unknown	Child died suddenly. Mother a cigarette maker	No
	5	73 Cannon St.	Hungarian	25		80	75	66	Bottle	Partly	Lack of milk	At once	Light	3	26	20	Diarrhoea		One of twins—mother nursed the other—left depot for 2 days and fed baby on milk from roof-garden; baby contracted severe diarrhoea from which it did not recover.	No
	6	" "	Hungarian	10	Pneumonia	65	98	90	Bottle	Wholly	Child ref. breast	At once	Light	1	4	4	Pneumonia	Pneumonia	Child brought to depot very sick. Taken to Junior Sea Breeze July 17. Died July 19	No
	7	" "	Hungarian	17	Severe diarrhoea	60	75	40	Partly	Partly	Lack of milk	At once	Light	1	4	2	Diarrhoea			No
	8	" "	Hungarian	11		65	80	99	Partly	Partly	Child ref. breast	2 wks	Light	2	25	25	Convulsions	Convulsions	Child fell out of carriage week previous to death	No
	9	" "	Russian	10		70	90	75	Bottle	Not at all	No milk	2 wks	Light	2	8	8	Diarrhoea	Diarrhoea	In good condition when came, but father fed it blackberry brandy and currants	No
	10	246 E. 82d St	German	49		8	50	50	Bottle	Not at all	Disease	4 mos	Severe	1	4	2		Gastro-enteritis	Very weak when brought to depot	No
	11	" "	German	15	Green stools. Marasmus	15	50	35	Bottle	Not at all	No milk	2 days		3	24	22	Green stools, marasmus	Marasmus	Sent to hospital Aug 10, died Aug. 12	No
	12	" "	Polish	21		45	50	40	Bottle	Not at all	Child ref. breast	At once	Light	7	56	50	Summer complaint, gastro-enteritis	Gastro-enteritis	One of the twins, both in bad condition—mother refused persistently to obey instructions and child never received proper attention.	Possibly
	13	" "	Hungarian	11		35	45		Bottle	Not at all	No milk	1 wk	Severe	1	1	1		Gastro-enteritis	Mother said child refused to drink depot milk } Twins. Died in hospital	No
	14	" "	Hungarian	11		20	45		Bottle	Not at all	No milk	1 wk	Severe	1	1	1		Gastro-enteritis	Mother said child refused to drink depot milk }	No
	15	" "	Hungarian	6	Green stools	10	50	80	Bottle	Not at all	Disease	At once		1	7	6		Gastro-enteritis	One of twins. Both sent to hospital and died same day. Had been fed on condensed milk	No
	16	" "	American	42	Green stools	20	60	40	Bottle	Not at all		At once	Light	1	4	2		Gastro-enteritis		No
	17	146 W. 100th St.	Italian	8		90	75	85	Partly	Partly	Lack of milk		Light	3	34	26	Green stools after coming to depot	Entero colitis		Apparently
	18	" "	American	99	Pneumonia	35	60	60	Bottle				Light	1	6	6		Pneumonia	Formula ordered by Vanderbilt Clinic, where child was being treated for pneumonia	No
PASTEURIZED MILK DEPOTS.	1	160 Mott St.	Italian	21		65	40	40	Bottle	Not at all	Disease		Light	5	23	23	Diarrhoea	Gastro-enteritis	Treated by private physician, died several weeks after leaving depot	No
	2	" "	Italian	11	Diarrhoea	10	40		Bottle	Not at all	No milk	1 mo	Light	1	7	7		Gastro-enteritis		No
	3	" "	Italian	15			30	50	Bottle	Not at all	No milk	At once	Light	1	9	8		Unknown	Treated by private physician, died three weeks after leaving depot	No
	4	" "	Italian	9			40							1	5	5		Unknown	Died 23 days after leaving depot	No
	5	" "	Italian	8	Diarrhoea	35	90	90	Partly	Partly	Lack of milk	2 wks	Light	1	4	4		Diarrhoea	Treated by private physician	No
	6	262 East B'way	Russian	25		45	60	60	Bottle	Not at all	Pregnancy	2 wks	Severe	3	9	9	Diarrhoea	Diarrhoea	Went to Gouverneur Hosp. Aug. 15, died Aug. 18	No
	7	" "	Russian	43		25	25	50	Bottle	Not at all		6 mos	Light	1	3	3	Mastoid operation		General ill-nourishment	No
	8	" "	Russian	18		40	40	50	Bottle	Dr. advised not to breast-feed		At once	Light	1	13	13	Pneumonia	Pneumonia	Died at Babies' Hosp.	No
	9	" "	Hungarian	31	Eczema, marasmus	45	60	50	Bottle	Mother ill-nourished		At once	Light	2	24	15		Marasmus		No
	10	" "	American	70		50	40	40	Partly	Partly	Weakness	3 mos	Light	2	8	8	Marasmus, rickets	Marasmus and rickets	Mother did not come for milk until 24 days after doctor prescribed it	No
	11	412 W. 47th St.	American	16	Marasmus	20			Bottle	Not at all	Rheumatism	2 mos	Severe	4	22	22	Marasmus	Gastro-enteritis	Very sick at all times. Bowels green and curds. Died in convulsions	No
	12	" "	American	7	Emaciated, green stools & vomiting	20	40	60	Bottle			3 wks	Light	2	8	8	Vomiting	Gastro-enteritis	Mother gave baby home remedies and fed it raw milk	No
	13	" "	Irish	10	Emaciated, vomiting & diarrhoea	35	40	57	Bottle			2 days	Light	1	9	2	Diarrhoea, vomiting	Diarrhoea	Mother gave baby brandy	No
	14	" "	Irish	17		70	75	66	Bottle	Not at all	Mastitis	7 days	Light	4	28	28	Diarrhoea	Diarrhoea	Mother took baby to country July 16, apparently well. Returned with diarrhoea July 23. Taken to private physician. Did not return to depot. Died July 27	No
	15	" "	Irish	61	Pneumonia	27	40	29	Bottle	Not at all	Pregnancy	1 year	Light	1	10	10		Pneumonia	Child died of neglect. Mother a drunkard	No
CONSULTATIONS NOT CONNECTED WITH MILK DEPOTS.		CONSULTATION STATION.																		
	1	248 E. 103th St.	American	22	Malnutrition	30	65	50	Bottle	Not at all	No milk	1 mo	Light	7				Gastro-enteritis	After attending 2 consultations was sent to seaside. Returned in bad condition and did not improve	No
	2	173 W. 63d St.	English	9	Premature, in poor condition	25	50	80	Bottle	Not at all	Disease	1 wk	Light	1				Diarrhoea	Treated by private physician. Died several weeks after leaving consultation	No
	3	" "	American	17	Heavy cold, poorly nourished	30	50	47	Bottle	Not at all	No milk	1 wk	Light	2				Pneumonia	Treated by private physician. Died several weeks after leaving consultation	No
	4	" "	English	22	Diarrhoea	15	40	63	Bottle	Not at all	No milk	2 wks	Light	1				Diarrhoea	Treated by private physician. Died several weeks after leaving consultation	No

Summary—deaths under 6 mo., 28; from 6 mo. to 1 yr., 5; over 1 yr., 4. Of these last, 2 died of pneumonia; 1 of marasmus and rickets; and one of gastro-enteritis.

* Note—Estimate of Committee's responsibility approved by the Association of Physicians of the New York City Milk Depots.

In like manner, the nurse at East 105th Street, who was not connected with a milk depot, and who had only one death to her credit throughout the summer (that of a moribund incubator baby), made in August only eight-eight visits, or an average of four a day. This nurse was a Normal graduate (one of the few "teaching" nurses in the State), and had had considerable experience as an instructor in domestic science. Her work is interesting from an educational standpoint, as it shows the results of quality versus quantity. Frequently her home visits lasted as long as two hours. She aimed, with all the others, to do thorough work, believing that one mother won was better than a hundred vaguely and indefinitely impressed. This is the spirit the Committee has tried to inspire in all its nurses, and which it believes is largely responsible for the personal interest and effort displayed by each of them. All of the nurses overworked. Those employed in depots worked seven days a week throughout a great part of the summer. Some began as early as seven in the morning and did not finish until seven or eight at night. They did not consider themselves, but worked because they were interested in their work. This is a spirit to admire, but social agencies must take care, lest in saving infants, they kill a number of women who are useful to them and to the community as well.

THE EXPERIMENTAL PROGRAM—FACTS SHOWN BY THE SUMMER'S WORK.

Experiment No. 1.—What are the comparative results obtained by the continued use of pasteurized and of raw milk?

Of 156 babies attending consultations in the pasteurized milk depots, the week ending August 31st, the condition of 81.4% was improving as opposed to 73.6% in the raw milk depots. On the other hand, only 12.3% of the raw milk babies actually lost against 13.5% of the pasteurized milk babies. The difference is accounted for in the number of babies whose condition remained stationary, this number being larger in the raw milk depots than in the pasteurized milk depots. The total number of

babies whose condition was either stationary or improving in the raw milk depots was 87.7%, against 86.5% in the pasteurized milk depots. Of the babies who died, the two whose deaths *apparently* were due to the milk were fed on raw milk, as was also the one whose death was *possibly* due to the milk.*

Because of the brevity of the period which they cover, these figures have little statistical value. Actually, however, it was the experience of the physicians that the babies fed on raw milk were more apt to be upset than the babies fed on pasteurized milk; and it was the custom, among certain of them, to order the mother to pasteurize the raw milk in the feeding bottles, if by chance it did not agree with the baby. The fact that this was deemed necessary, as well as the good showing made by the two nurses not connected with infants' milk depots, who instructed their mothers to bring their milk to the boiling point, substantiates the opinion of those who have worked upon this problem that raw milk, however excellent may be its quality and however carefully it may be prepared, is less desirable for infant feeding during the summertime than pasteurized milk. The *nutritive* value of the two kinds of milk is a question which can only be decided after a period of long and wide observation, such as the Committee has undertaken. Given a certified or guaranteed milk, properly modified, refrigerated and safeguarded in every way, the question of pasteurizing it or using it in raw state *is of minor consideration compared to the instruction of the mother and the care which she gives her infant.* But until the system of handling even this certified or guaranteed milk has been reduced to the highest state of perfection, from the farm to the consumer,

[* Among the mothers who used raw milk, the home refrigeration was poorer than among those who used the pasteurized milk. This is shown in the table on page 27. The one death for which the depots *possibly* were responsible occurred at 246 East 82d Street, where 50% of the mothers had no refrigerators. One of the deaths for which the depots *apparently* were responsible, was at 146 West 100th Street, where 25% of the mothers had no refrigerators, and one was at 434 East 73rd Street, where 80% of the mothers had no refrigerators.]

the milk, for infant feeding, should be pasteurized. Given ordinary store milk, modified by the mother, the question, in the present state of the supply, admits of only one answer—that milk should be pasteurized.*

Experiment No. 2.—Which is the more economical and satisfactory method of saving infants' lives—the purely educational program carried on in connection with the ordinary milk supply, or the sale of modified milk dispensed by nurses who also do instructional work?

The work of the past three months demonstrates that even in the present condition of the general milk supply, infant mortality may be reduced through the holding of classes or consultations in which mothers are instructed how to feed and care for their babies, by physicians, assisted by nurses, who "follow up" this instruction into the homes.

The significance of this is, briefly, that with no expenditure whatever for a laboratory and equipment for modifying and distributing milk, any city, settlement or philanthropy may definitely save infants' lives by obtaining the services of physicians assisted by trained field nurses.

But while independent nurses can obtain results, these results would be multiplied and enhanced, if, still retaining their freedom from business details, the nurses could have the support of infants' milk depots. The greatest weakness of the Milk Com-

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* At a meeting of the Executive Committee of the Milk Committee held October 14th, the following statement of the Committee's attitude toward pasteurized milk was formulated and approved:

The Committee approves of the pasteurization of all milk which has not been produced under sanitary conditions which has not come from tuberculin tested cattle and cattle otherwise free from disease and which cannot be supplied to the consumer with a sufficiently low bacterial content to offer safety from milk borne infection. The Committee approves of the pasteurization of milk when modified for infants' use in the home.

The Committee approves of all measures, individual, state or municipal, which will lead to the institution of sanitary conditions on dairy farms. (This conviction has on two occasions, led it to oppose measures directed towards the establishment of compulsory pasteurization of milk by city or state authorities, on the ground that such measures would put the producer of dirty milk on an equal footing with the producer of clean milk, and thereby postpone the institution of the desired sanitary reforms.)

mittee's outside nurses during the past summer (apart from the handicap of poor milk) lay in their inability to secure a firm hold upon mothers for purely instructional work. Their greatest strength lay in their freedom to visit and "follow up."

The greatest weakness of the depot nurses lay in the restraint (entirely removable) which milk distribution and business details imposed upon them; and their greatest strength (apart from the value of the pure milk which they sold), lay in the bond which the sale of that milk constituted between them and those whom they were trying to educate.

The answer to the Committee's experiment, therefore, is found neither in one system nor in the other, but in the combination of the two; that is to say, in the connection of *free nurses* with infants' milk depots.

Whole milk should be sold at these depots in conjunction with modified milk for the following reasons:

1. Because, especially in communities where ignorant mothers look upon bottled milk as possessing great efficacy, the exclusive sale of modified milk places undue emphasis on hand feeding, and, as the Committee's doctors have found in many instances, *actually discourages feeding at the breast.*

2. Because the exclusive sale of modified milk deprives the fairly intelligent mother of an opportunity to exercise her intelligence in modifying her own milk, and thus is a step backward in the educational program.

3. Because where the mother is intelligent and carefully follows the physician's instructions, she actually can give the baby a food better, because more elastically fitted to its needs.

4. Because modified milk costs more than the average tenement mother can pay.

5. Because giving this milk (either through reduced prices or actual relief) to mothers who are able to modify whole milk imposes on philanthropy an expenditure which the Committee believes might better be applied to an educational program.

During the month of August, the Milk Committee supplied modified milk gratuitously to one hundred infants. The average amount of milk consumed by each baby daily was 32½ ounces. The actual cost of producing, modifying, and delivering this milk, not including rent of depots, help in depots, refrigeration, light, incidentals in depots and general administration, was $.004 an ounce or 13 cents daily for each infant. Had the items mentioned been added, the actual cost, apart from the nurses' salaries, would have been very nearly $.005 an ounce or 16¼ cents daily for each infant. *

For the one hundred infants fed gratuitously in August, the Committee, through its business losses, and the New York Association for Improving the Condition of the Poor, through its relief, expended actually $503.75. From this must be deducted the sum which it would have paid for whole milk had it been merely *instructing* the mothers. The amount of whole milk consumed daily by each infant fed by the Committee in August was 18 4-10 ounces or a little more than one pint. At the rate of 15 cents a quart for certified milk, this one pint would have cost 7½ cents daily or $232.50 monthly for one hundred infants, a saving of $271.25 over the cost of modified milk.

At the rate of 10 cents a quart, it would have cost 5 cents daily or $155 monthly, for one hundred infants, a saving of $348.75 over the cost of modified milk.

At the rate of 7 cents a quart, it would have cost 3½ cents daily or $108.50 monthly for one hundred infants, a saving of $395.25 over the cost of modified milk.

Trained nurses—the very best—can be secured for $75.00 a month. Nursery maids or matrons, trained to work among infants under the supervision of nurses, can be secured for $40.00 a month. Dr. R. A. Cooke, who has been working with the Commit-

[* The Committee, as had been stated, paid 8¾ cents a quart for its whole milk. At the close of the hot weather, the substitution of inspected milk for this certified milk was suggested to the Association of Physicians, working in connection with the depots. The decision was that even in winter, the certified milk, representing greater purity and safety, should be continued.]

tee's outside nurse at East 105th Street, believes that one trained nurse, supervising two assistants in connection with physicians and consultations, can thoroughly instruct and follow up one hundred babies. In other words, the $271.25 saved the Committee by the substitution of 15-cent whole milk for modified milk would have paid the salary of two nurses and three assistants, able, according to Dr. Cooke's estimate, to look after 175 babies. The saving on 10-cent milk would have paid the salaries of two nurses and five assistants capable of looking after almost 225 babies, *and the saving on 7-cent milk would have paid the salaries of two nurses and six assistants, capable of looking after about 250 babies.*

If milk costing 7 cents a quart had been sold, probably a large number of mothers who felt they could not afford the Committee's expensive modified milk, would, rather than accept charity, have paid all or part of the full price, and would thus have increased by from $50.00 to $60.00 the amount expended by philanthropy not only upon educating the mothers and improving the condition of their infants, but in raising the general standard of their lives.

The problem for philanthropy and for other cities, therefore, is a *cheap, clean milk,* modified only when mothers are too ignorant to be intrusted with its preparation or are prevented from so doing by employment. Both kinds of milk should be sold from the same depot where physicians should instruct mothers, and nurses assisted by nursery maids, matrons or visitors, should follow up the cases in the homes.

The cleaner the milk, the more lives will be saved.

The cheaper it is, the more money will be spent on education; the less money will be wasted on unnecessary relief; more families will retain their self-respect and integrity, and the whole standard of family life, of such vital and absolute importance to the nation, will be raised.

Experiment No. 3.

Can Infant's Milk Depots Be Run on a Business Basis, and If Not, In How Far Will Philanthropy Be Needed To Support Their Work?

The first part of this question (considering infants' milk depots as places where modified milk exclusively is sold) is merely another way of asking whether modified milk can be produced and distributed at prices which poor people can pay.

To this, the answer is definitely No.

Not only will modified milk, prepared under the most economic conditions, be out of the reach of a great number of poor people, but even whole milk, were it possible to produce a guaranteed article at seven cents a quart, would still be beyond the reach of those in greatest need. Philanthropy must assist either

(a) By conducting the business on a losing basis, rendering indiscriminate assistance through reduced prices to all; or

(b) By actually conducting or coöperating with an enterprise which conducts the business on a paying basis, rendering discriminating assistance through actual relief.

In either case the amount of this assistance will vary according to the quantity of modified or whole milk sold and will decrease in direct proportion to the increase in self-respect and intelligence of the families using it. But to increase the self-respect and intelligence of the families using it, philanthropy must do something more than hand out milk tickets, coupons or requisitions. *It must educate*—and this requires first of all that it should educate itself.

In the infants' milk depots, supported by the Milk Committee, and in others to a greater or less extent, not only has milk been bought, modified and sold, but nurses have been employed, poor people have been relieved, statistics have been compiled, instruction has been given, home visits have been made and a number of other matters have been attended to. In other words, the Committee has been engaged in business, philanthropy, medicine, sanitation, statistics and education, and it goes without saying that it has done no one part of the work as well as it would have been done had not the others at the same time engrossed its attention.

To carry on a true program of education—in other words to wage a successful campaign against infant mortality—it seems necessary to segregate the different departments of the undertaking, letting each be managed separately but in coöperation with all the others, and coördinated by a joint executive board or board of management. Ideally, this should be under the supervision of the municipality.

The departments in which the work should be divided are as follows:

(1) The production, handling and sale of the milk (business).
(2) The investigating and relief of necessitous cases (philanthropy).
(3) The feeding and instruction of mothers and babies (medical).
(4) The "follow-up" and statistical work (social or municipal).

(1) The Production, Handling and Sale of the Milk: (Business):

Under the first head the turning over of the business end of the undertaking to a strictly milk enterprise seems highly desirable. Such an enterprise, enlarging on the Copenhagen plan* could provide milk (and perhaps a few other dairy supplies such as eggs and butter) for nursing mothers and for children under five years of age, and could set a standard for other milk companies in producing and selling under sanitary conditions a *cheap, clean* milk—the crying need of the tenement districts of every city. Whole milk as well as modified milk should be sold, the latter of which, to save expense, could be pasteurized and modified according to the doctor's instructions in the home. The price set upon the milk should be one dictated by terms of *fair business competition.* Never should the milk be sold below cost or at less than a fair profit. Should those in control wish to set aside any or all of their earnings for the benefit of their patrons, they should do so, not in such a way that the milk dealer, whose livelihood depends upon each dollar of profit, would be injured, but in an actual cash contribution for relief, to be administered through an efficient and discriminating relief agency. The right

See note, page 81.

to do what they will with their earnings is obvious, but philanthropists have no right, by selling below cost or below a fair profit,* to help those who do not need to be helped and thus tempt or force them to become, in effect, recipients of charity. Such a procedure encourages pauperism, diverts money from useful to harmful channels, and injures legitimate business by bidding for the regular dealer's customers on terms which he cannot meet.

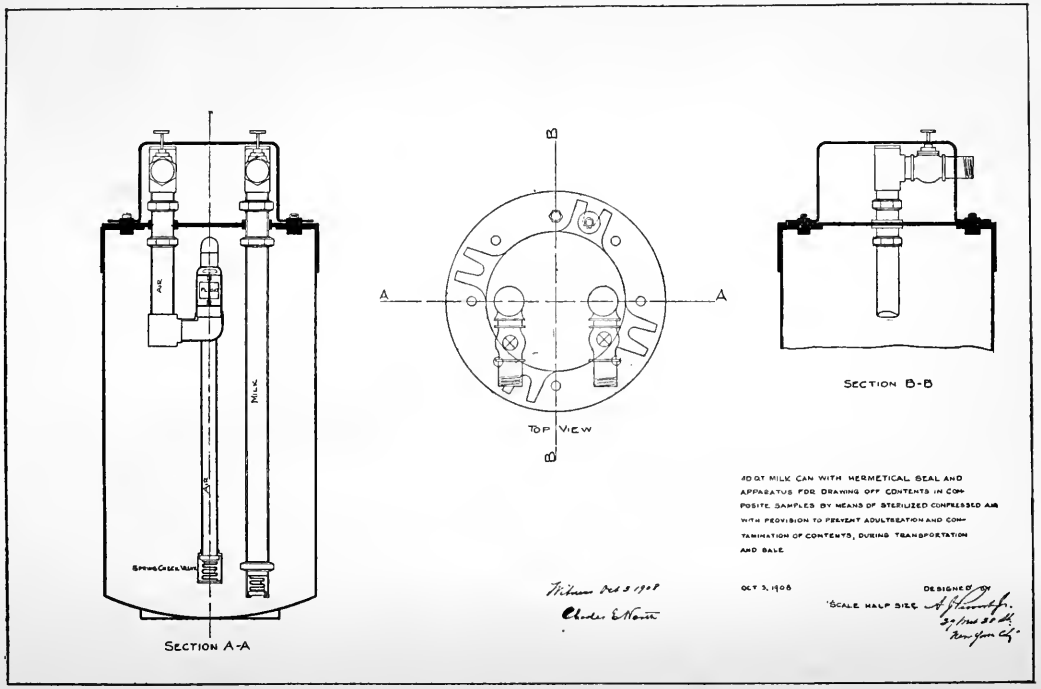
Selling milk below cost or at less than a fair profit also creates not only a false idea of the value of *that particular milk,* but of all milk whose price is determined by the time and effort expended in securing its purity and safety. Such a procedure is *bad milk education.*

But while the enterprise should be *fair,* it should not forget that it is endeavoring, on terms of just but rigorous competition, to establish new standards, and that it is particularly in search of a *cheap, clean* milk for the tenements. Such a milk, the Committee believes, may yet be obtained.

Dr. Charles E. North, of the Executive Committee of the Milk Committee, in his pamphlet entitled "A Method of Milk Production," explains how a milk, drawn from non-tuberculous cows, and equal in its bacteriological count to certified milk (in other words, meeting the requirements of the New York Health Department's newly classified "guaranteed" milk),** may be produced at a slightly increased cost at the farm. Hitherto the problem has been how to transport this milk to the city and keep it clean. Mr. Provost of the Lederle laboratories has, at the request of the Milk Committee, constructed a milk can which seems to meet the problem. This can, a patent for which is being procured, is provided with a detachable faucet, from which the milk can be drawn at the station into a single service paper or wooden bottle, and is so arranged that having been sealed at the creamery or dairy where it is washed and sterilized, "burglarizing" or adulteration is rendered absolutely impossible. In order thoroughly to mix the milk, the can, by a simple arrangement,

[* As the Milk Committee in effect, has done.]

[**Guaranteed milk corresponds to certified milk except that it is produced under the rules and regulations of the New York Health Department instead of the Milk Commission of the County Medical Society.]



Drawing of the Provost milk can, designed at the request of the New York Milk Committee.

is attached to a compartment containing compressed air, which has been pumped into it through a cotton strainer, and is absolutely sterile. By shipping direct from the dairy to the milk station, and thus avoiding the cost of bottling, freightage on bottles, breakage, washing and sterilizing of bottles and additional handling in the city, this milk which Dr. North believes should contain less than 10,000 bacteria per c. c. in a raw state, and which could be pasteurized at a great economy to poor people in the home,* could be sold at a very cheap rate, *possibly* as low as seven cents a quart.

With the equipment and buildings, found in most large cities, for the handling and sale of both whole and modified milk, the expense of conducting enough infants' milk depots to meet all demands should not include, *from the City standpoint,* much more than the purchase of cans, the installation of new depots and the cost of delivery.** By securing the coöperation of a certain number of farmers to produce milk according to Dr. North's method the establishment of a sufficient number of infants' milk depots to feed as many babies as circumstances require should not be difficult. The control, by the milk enterprise, of a model dairy or dairies, either owned by it, or working

[*Mr. Nathan Straus has recently invented a very excellent home pasteurizer, which he hopes to place on the market for the price of $1.00.]

[**A model milk concern with a *maximum* daily capacity for handling 8,000 quarts of whole milk and modified milk for 1,000 infants, and an *average* capacity sufficient to supply twenty depots selling 300 quarts daily of whole milk, and providing milk for from twenty-five to forty babies each, could be organized, equipped, and maintained until it was on its feet, with a capital of from $75,000, to $100,000.

If, by the combined influence of education, example and financial inducements, such a concern could elevate a community of unclean milk producers to satisfactory standards; if it could handle that milk in a creamery remodelled from an old run-down creamery along the most sanitary and economical lines; if it could make its own terms for transportation by railroad and for delivery in the city; if it could equip and maintain its own model stores, and at the end of a definite period of time, if it could issue an illustrated, "before and after" report showing, item by item, in just how far it had succeeded in producing milk of a high standard, selling it at a fair profit, and yet bringing the price of this milk within the reach of poor people,—if a milk concern could do this, it would achieve more than a mere commercial success, for it would educate along the broadest and most useful lines.]

in coöperation with it, under the supervision of the Health Department, is, likewise, ideally desirable. These matters would work themselves out when men concerned in the milk business, philanthropists, physicians, and sanitarians once got together on the subject.

The location of the depots is a matter deserving careful consideration. When attached to dispensaries and settlements their usefulness is greatly increased, as they are then combined with valuable supplementary activities and interests. The giving of rooms, rent free, by these institutions, is, however, undesirable, as it immediately constitutes a philanthropic subsidy against which legitimate business cannot compete. If the institution is able and wishes to contribute the room, the milk business should pay a fair rental, which the institution might apply in any way which it might deem advisable. Similarly, if space in the stores is occupied for philanthropic purposes, rent should be charged to the agency employing such space, provided that the good will of this agency does not offset the nominal rent fee. This could be determined by the coöperating parties.*

(2) The Investigating and Relief of Necessitious Cases (Philanthropy):

Given a clean whole milk and a *minimum* of high grade modified milk, sold at as low a price as the terms of fair competition will permit, the next step is to see that no woman, young child or infant in New York City who needs that milk, is deprived of it. Here is the problem for philanthropy. If the milk is sold at a fair profit, and if the needs of the entire city are to be met, the call upon relief agencies will be great. At the same time a big economy will be effected by selling more whole milk and less modified milk, for most mothers can and will pay

[* The Committee is engaged at present in working out the interior arrangement of a model depot at 202 Henry Street. In the front of this depot it proposes to dispense whole and modified milk, leaving space in the rear for the consultations, and for conferences between mothers and nurses. Several ideas which have grown out of the Committee's experiences will be incorporated in this depot which will be open at all times to those who may wish to visit it.]

for whole milk—increasingly so as they are educated to know its worth. The ultimate call upon philanthropy will also be less than it would be if it were conducting the business itself, and if the milk—both whole and modified—were sold below cost or below a fair profit, because in that case many non-necessitous people would be relieved, the profit on whose payments could be used in behalf of the really indigent.

Clearly distinguishing between business and philanthropy would accomplish two things:

(1) It would show the public definitely how widespread is the state of undernourishment on the part of pregnant mothers, nursing mothers, infants, and young children in New York City, and give it some clear idea of its responsibility; and

(2) It would educate and give poor people a means of distinguishing between bad and good milk, between nourishing and hurtful food, between true and false dietetic economy.

These two lessons—the lesson of a great need on the one hand, and the importance of good, wholesome food, on the other—sorely need preaching to the rich and poor alike. Any plan, system or method in which a sharp distinction is not drawn between business and philanthropy conceals these facts, and thus deceives the public and the consumer as to the true state of affairs.

The milk company should be thoroughly in coöperation with every relief agency, settlement, church, and social organization in New York City, whose trained visitors, workers or investigators would determine whether the cases in their care should pay full price, part price or nothing at all for the milk. Each mother should be required to pay *something,* however small, if she were able, the really needy cases, of course, receiving the milk free. In this way the danger of imposition on the one hand, and neglect on the other, would be avoided and a standard of efficient and discriminating relief would be established. Regularly itemized bills could be rendered by the depot to the proper agency for the amount over and above that which it had been determined the mother could pay for the milk.

(3) The Feeding, Instructional and Statistical Work (Medical):

Having secured the coöperation of the milk business and philanthropic organizations, it would be necessary to secure the confidence of all physicians and to enlist their interest in the work. This could be done by placing every detail of the milk company's business from the testing of cans and the operations of milking, straining, etc., at the farm, to the modification of the milk and its delivery in the city, under the supervision of the Health Department, and by securing the approval of the Academy of Medicine for the general instructional and preventive work carried on in the depots. Further coöperation could be secured by making it possible for any physician to refer a *private* patient to the depots for milk, modified according to his prescription, turning over the *indigent* cases to the physicians who would hold classes for the instruction of the mothers in connection with the depots. In this way free instruction and relief would be given only to those who needed it, and the scope of the work would quickly and automatically adjust itself.

Each depot should be under the charge of a senior physician, selected in such a manner that the other physicians of the neighborhood would have confidence in and would coöperate with him. Such a physician might be a volunteer, or he might be provided by the municipality—but in any case, to secure perfect coöperation, his selection should meet with the approval of those with whom he would have to work, and his duties should be such as not to infringe in any way upon the private practice of these men. If he were from the municipality he could easily conduct classes for as many babies as the depot could handle. If he were a volunteer physician, he would need assistants, chosen with equal care.

The instructional capacity of the depot should be thought out carefully, and the work of doctors as well as nurses should be viewed from the standpoint of maximum efficiency in securing permanent results. Most volunteer physicians, the Committee has found, cannot as a rule afford to give more than one class

or consultation weekly, and few feel that they are able at this class to attend thoroughly to more than ten or fifteen babies. Others are willing to devote more time and strength. The instructional work, therefore, which the depot can undertake depends entirely on the number of physicians who give their services, the amount of time contributed by them, and the number of nurses with nursery maids, matrons or visitors under them, provided by philanthropy or the municipality to assist the physicians.

As to the difficulty of obtaining volunteer physicians that, judging by the Milk Committee's experience, should not be great. Perhaps there is no class of men more generous, altruistic, or more deeply stirred by the suffering about them than the doctors who work in the tenements of any city. On July 26th, when the physicians, giving classes of instruction in connection with the Committee's milk depots, came together to organize the Association of Physicians of the New York City Milk Depots, sixteen out of twenty-nine were present; this, in spite of the fact that the day was hot, the hour not convenient for all of them, and that many were absent on their vacations. This is fairly indicative of the spirit which actuates the profession. Many doctors, of course, know little or nothing about infant feeding. Yet the lives of the tenement babies—the most endangered lives of the community—are in their trust. With their eagerness to learn, their enthusiasm and their high motives for the work, these physicians—young men mostly, of all nationalities—constitute a tremendous, potential force for the reduction of infant mortality. They wish to, and they should be utilized.

(4) The "Follow Up" and Statistical Work (Social or Municipal):

The fourth and last coöperating factor in the scheme is an able and competent force of nurses. These nurses should be "directresses of the depots," devoting their energies to the "classes" and follow-up work—not in handing out bottles or rendering accounts. They should be the coördinating units, joining the sanitary, medical, social and municipal interests in the depots. Their babies would come—would be sent—to them. Consequently they

would not be regarded as intruders and unwelcome guests when they visited the homes. They would be social workers, persons of importance in their neighborhoods, carrying on a fine and sympathetic, because natural, work.

By holding the nurses responsible for the health and lives of the actual babies under them, there would be less likelihood of perfunctory service, as is the case when results are measured by numbers and quantity. With the milk as a drawing card, the nurses would obtain that "hold" upon the mothers, the lack of which was felt so keenly by the Committee's "outside" nurses during the past summer. By being relieved of bookkeeping and the sale of the milk, they would have that time and freedom, the lack of which so seriously hampered the depot nurses.

The nurses should be held responsible for the statistics in their individual depots.* In this they would coöperate with the senior physician and his assistants, each of whom naturally would take an interest in the health and progress of his own babies. By this arrangement it would be possible for any physician or nurse to compare the work done at any consultation

[* In carrying on statistical work in connection with social enterprises two dangers present themselves—first, the danger of making the work so thoroughly scientific that the object of winning people's hearts for their own betterment is quite forgotten; and second, the danger of loose, carelessly gathered, and slovenly-handled facts, which bother and impede to a less degree than the really valuable facts, gathered in a scientific manner, but which in the end are of *no* value whatever.

The thing to be determined then, is first, does one wish to collect facts, and second, how many facts, what facts, and for what purpose does he wish to collect them; and how much money is he willing to spend upon them? If facts are worth anything, they are worth *getting*. This requires *time*. If they are worth getting, they are worth getting right. This requires *preparation* and *supervision*. If they are worth getting right, they are worth handling right. This requires *analysis*. If the results are to be valuable (that is, are not going to be upset by the omission of some essential factor, or by some ridiculous, unscientific and lame conclusion), *preparation, supervision,* and *analysis* must be the work of an expert statistician, or at least of some person having the criticism and advice of an expert statistician. *Time* is the contribution of the collector, taken if it be a nurse (like the Committee's nurses), from her other work.

Now, the "other work" of the nurses is to save lives—to prevent death by means of education. But to prevent by education, one must educate to prevent; to educate to prevent, one must study facts, and to study facts, one must obtain them. The problem of statistics versus service, therefore, is simply one of choice and expenditure, in terms of ultimate results.]

or depot, with that at any other. This would place a premium on individual effort and would introduce the important element of personal emulation, usually lacking where things are over-systemized.

While the sending of relief visitors into the same home which the nurses visit seems like a duplication of effort, it is necessary, at least until the time comes, when, in addition to their professional ability, nurses acquire the qualification of social workers as well. Nurses just entering field work, keenly sensitive as they are to the suffering about them, are apt to let their sympathies run away with their judgment when it comes to passing upon the economic status of a poor family; and, apart from this, relief agencies which are dispensing thousands of dollars yearly would not be faithful to their trust, did they not dispense that money efficiently, discriminatingly, through those whose judgment they trust. There is no reason why trained nurses should not be trained social workers, as well; in fact, both from the standpoint of economy and results, there is every reason why they should be trained social workers. But until this social training is acquired, and so long as the philanthropy, society, or municipality which pays their salaries is not that which furnishes the money for relief, a division of labor, even at the expense of its multiplication, is unavoidable.

SUMMARY.

No difference has been shown between the *nutritive* values of raw and pasteurized milk in the brief period so far covered by the Committee's experiment. From the standpoint of *safety,* pasteurized milk has given the most satisfactory results.

Independent nurses, doing purely instructional work, can accomplish more than nurses whose time is largely occupied with dispensing modified milk, but *free nurses,* connected with infants' milk depots, because of the hold which the dispensation of milk gives them upon ignorant mothers, can accomplish more than either of the other two.

Whole milk should be sold in conjunction with modified milk in infants' milk depots for the following reasons:

(a) Because, the exclusive sale of modified milk discourages breast feeding.

(b) Because, wherever possible, home modification of whole milk is desirable from an educational standpoint.

(c) Because, the substitution of whole milk for modified milk means a big economy to poor mothers and philanthropists, the latter of whom could devote to educational purposes money which is often spent needlessly on modified milk.

Viewed from the standpoint of their united activities, infants' milk depots cannot be supported without philanthropic assistance, rendered, either

(a) Through reduced prices and business losses, or

(b) Through direct relief.

The best method seems to be to sell the milk on a business basis in coöperation with physicians, philanthropists, social workers and the municipality.

The benefits of such an arrangement would be:—

(a) All forces would work in harmony.

(b) Legitimate business would not be injured.

(c) A "standard" would be set for other milk concerns.

(d) Non-necessitous cases would not be "relieved" by below-cost purchases.

(e) Relief would be carried on efficiently and with just discrimination by relief agencies.

(f) Society would be rightfully informed about the great problem of undernourishment.

(g) People ignorant of the value of milk would not be kept in ignorance.

(h) By accepting only necessitous cases for relief and instruction, the scope of the work for philanthropy, physicians and nurses would automatically adjust itself.

(i) By placing responsibility on each depot, physician and nurse, the advantage of "personal emulation" would be secured.

(j) By "holding" the mothers, permanent educational results would be secured.

(k) By gathering statistics and by wide observation, important facts about infant feeding and the conditions affecting the lives of mothers and children would be ascertained and the way paved for a more effective campaign against infant mortality.

The Copenhagen Milk Supply Association was founded in 1878 by a group of philanthropists whose object was to supply Copenhagen with milk which should be above suspicion as to purity and cleanliness. Three classes of milk are supplied—ordinary commercial milk, from herds free from tuberculosis and under constant supervision of the Company's inspectors; milk for children supplied from herds carefully picked and more rigidly guarded than those supplying ordinary commercial milk, and milk for nurslings produced under the most rigid hygienic standards and modified according to standard formulæ and to the formulæ of physicians to meet the peculiar conditions of infancy. It was early discovered that this class of milk could not be produced successfully by farmers. Accordingly, another company was organized, but although the herds supplying the infants' milk are under direct supervision of this sub-company, the handling of the milk is as far as practicable carried on by the original company. Through the generosity of public spirited citizens as well as of those in control of the milk company, which meets deficits out of the profits of the other branches of the supply, the price fixed with infants' milk is extremely low, and at times the milk is dispensed gratuitously.

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